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TWO GENERATIONS OF HEREDITARY OR CONGENITAL ATAXIA: A CLINICAL CONTRIBUTION.

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TYPICAL examples of hereditary or congenital ataxia, also designated as Friedreich's disease, are to be regarded of rare, or at least, not very frequent occurrence in the clinical records of general ataxic disorders. For, with the exception of certain well-known instances, the greater number of such recorded cases, although doubtless rightly classed among this variety of motor spinal affections, are, in many instances, lacking in some important or essential characteristic,—most frequently the distinctive feature of a clear hereditary or congenital history, and consequently fail to group together that full complexus of symptoms claimed to be representative of a separate form. Therefore, cases possessing these requisite qualities cannot be otherwise than of decided professional interest, and my purpose in this paper is simply to narrate the history of a family, embracing several cases, and extending through two generations, recently coming under observation, which seem to furnish all the necessary symptoms illustrative of this type of ataxia.

The facts and data relative to the history of the *older* generation were obtained from the brother-in-law (being also the father and uncle of the cases now living), an intelligent gentleman, whose statement throughout was clear and explicit. For the opportunity of making a careful and thorough personal examination of the cases constituting the *present* generation, together with the necessary information concerning their previous history, I am indebted to the late Dr. Joseph H. Hamilton of this city, under whose constant professional care they have been from birth, and who was able, therefore, to detail every phase in the progress of the disease from its incipiency to the present time.

Under these circumstances, I offer the following histories as constituting a complete chain of valuable and unbroken facts.

Going back three generations I learn that the grandparents of the present (third) generation were blood relatives, being first cousins. They were of French descent, were born in New Orleans, where they resided until early adult life, and then after marriage moved to Mobile. Both were vigorous and healthy people, without nervous troubles or any known hereditary tendencies, and died from ordinary causes at somewhat advanced ages.

FIRST GENERATION.—The result of this union was two sons and five daughters. The latter were all comparatively healthy, well-formed and well-grown, and active physically and mentally. With the two sons, however, the nervous affection first showed itself, although the manifestation of identical phenomena in these two members of the same family of children, together with its transmission through two others (sisters), as shown further on, indicates conclusively a marked and distinct hereditary influence.

CASE I.—Patrick, the eldest son, was the second child, and was born at term. He was a brunette in complexion, and up to the age of fifteen years was a vigorous, robust, healthy, and active boy. At this age, however, certain nervous symptoms began to be observed, which, at first, were characterized by an awkwardness and unsteadiness in using his legs and feet whilst walking, a shuffling and tottering gait, dragging his feet, and not lifting the toes clear of the ground, and consequently frequently stumbling and falling. Standing erect also became difficult. He complained of weakness of the entire limbs, especially the knees, and difficulty in rising from the sitting or recumbent postures. A "dropping down" of the feet when the leg was crossed, was a very noticeable feature. These symptoms progressed steadily and uninterruptedly from bad to worse, until finally the upper limbs were invaded, and after only a few years he became completely ataxic. There seems to have been no pain, or other sensory disturbance; vision and hearing were apparently normal; mental condition slightly, but not decidedly dulled, but his speech was slow, and he possessed an ungovernable temper. Notwithstanding medical attention, the disease marched steadily on, ending in a state of absolute helplessness, and he died from a general wearing out, as it were, at the age of thirty years.

CASE II.—The other son, Dominick, was the third child, and next to his brother Patrick. He was of a decided brunette type, and as a little boy, enjoyed excellent health, being about as active as children of his age. The origin, symptoms, and course of the malady with him were almost the exact counterpart of those exhibited in his brother's case. It began to be noticed at a somewhat earlier age, however, first affecting his locomotion at between the years of twelve and fourteen. It progressed with comparative rapidity, without any tendency to arrest, and finally reduced him to the pitiable state of a paralytic. The upper extremities became involved in a very few years after the initial symptoms, although with awkwardness and much effort he possessed sufficient control over the arms and hands to enable him to indulge in occasional clock repairing, and work of like character. He was of a violent temper,

but his mind was moderately bright, and he possessed considerable mechanical ingenuity. Vision and hearing were apparently good; general health excellent; he was well-nourished, and there was no evidence of any further trouble or derangement, except the progressive paralysis. He died in his twenty-eighth year, at which time he was unable to walk at all, and indeed could not even stand without assistance.

SECOND GENERATION.—The oldest sister of these brothers, who was also the eldest child, was always strong and active, and is still living in perfect health. She married Mr. K., a healthy man, and has several daughters and one son.

CASE III.—This son began to develop at an early age, about the tenth year, symptoms very similar to those shown by his uncles, namely, unsteady and awkward gait, a want of activity, frequent tripping and stumbling, and fatigue in walking, or after any moderate exertion. These symptoms, however, have not made any decided progress or change in the last few years, and he is now able to follow a non-active avocation.

I did not succeed in making a personal examination of this case, but obtained these data from the family physician.

The most important and interesting cases of the group are the sons of the other sister through whom the heredity was transmitted. This lady was the youngest child; was born prematurely (seventh month), but was healthy and vigorous. At the age of eighteen she married Mr. F., a strong, hearty man, with no hereditary or other history of taint, although he indulged afterward for many years in strong drink, then reformed, and is now a religious enthusiast. It should be mentioned, also, that she became addicted to the use of both alcohol and opium. Her husband states that she was a strong, hale, vigorous woman, but was clumsy, slow, and awkward in her movements, and had noticeably long limbs.

She gave birth to sixteen living children at term —six sons and ten daughters—and two miscarriages, and died of uterine cancer when forty-nine years old. Of these children, one daughter died at sixteen years of age of typhoid fever; another daughter fell a victim to smallpox in her eighth year, and five others succumbed in early infancy to intestinal disorders. Three of the sons also perished in infancy from enteric troubles, being bottle-fed, but were well formed and vigorous children. Consequently, there are now living three daughters, who are in vigorous health, and three sons, all of whom are the subject of the affection under consideration, and whose histories are detailed below.

CASE IV.—Willis, male, brunette, height five feet six inches, was the eldest child, and born in 1855. His birth was perfectly normal; was suckled at the breast, and grew up a healthy, active, and vigorous child until between the years of ten and twelve, at which age he began to lose his activity, and his gait was noticed to be awkward, uncertain, and unsteady. This was soon accompanied by frequent stumbling, the smallest obstacle serving to occasion him a fall, together with great muscular weakness, and fatigue in walking. As the trouble progressed these difficulties increased, and, in addition, especial trouble was experienced in rising from the sitting or recumbent position; and then, when his feet were gained, he was able, with a separation of his legs and the support of a cane, to maintain the upright attitude, and walk in the shuffling, ungainly manner above mentioned. He complained of particular weakness in the legs, and in walking the feet were stamped, or placed "flat" on the ground, and dragged the toes in lifting them for a step. All movements were slow and deliberate, with an air of hesitation and uncertainty about them. Mind dull, but no actual mental deficiency, and disposition gentle and patient. Arms first showed involvement about seven years ago.

The malady has steadily progressed until when I first saw him (1885) he was unable to rise from his chair, and could not stand unless firmly supported. The upper limbs were likewise almost useless; his grasp was exceedingly feeble; there was inability to handle easily small objects, and in placing the finger on the nose, or carrying a glass of water to the mouth, the arm was slowly and tremblingly brought around in a wide circle, and supported near the wrist by the opposite hand. The entire muscular system was wasted and flabby, but the thighs and arms, in comparison with the forearms and calves of legs, notably so. When the leg was crossed "foot-drop" was marked. There were no contractures, no joint or bone changes; action of sphincters sufficient; taste natural and digestion good, with the exception of constipation. Both hearing and vision apparently normal, and ocular movements natural. Knee-jerk abolished on both sides. There had never been either pain, anæsthesia, or numbness, and the tongue was protruded slowly but without tremor.

He had always enjoyed excellent health, and never suffered from any illness, except once about ten years ago. This attack was of a tetanoid character, and bore a striking resemblance to chronic tetanus, first affecting the muscles of the neck, and then those of the shoulders and arms, and lasting, notwithstanding medical treatment, several weeks. This then gradually subsided, leaving all the limbs, especially the upper, weaker, and with less coördination.

In the last few years his intellect had grown somewhat impaired, and now his speech was slow and hesitating. He remained in about this condition until September, 1886, when he contracted a slight cough. This continued for a day or two without any other observable symptom, when suddenly he became comatose, with dilated pupils; cyanotic; rapid, shallow respiration; small, wiry pulse; complete abolition of sensation and all reflex action, except slight effort to cough, and died after an illness of sixteen hours.

No post-mortem permitted.

CASE V.—Ervin, the third child, was born in 1860. He was a strong, vigorous infant; reared by a wet-nurse, and remained healthy and active until ten years old, when the first nervous symptoms were observed. These were very similar to, and progressed exactly like, those with his older brother, namely, unsteady and awkward gait, frequent stumb-

ling, fatigue in walking, and general lack of power in and control over the legs. This incoördination has advanced slowly up to the present time, when my examination now shows his condition to be as follows:

Aged twenty-eight, height five feet two inches, decided blond, rather small frame, square shoulders, and when dressed his chest appears large for the rest of his body. Head large and symmetrical; face well-featured and intelligent. Speech naturally quick and without hesitation. Appearance of face indicates moderately good nutrition, but palpation shows muscular wasting. This is decided over scapular regions, arms, and thighs; but the muscular groups forming the calves of legs and forearms, although not normally full developed, are much larger and firmer in proportion than the thighs and arms. Abdominal muscles also large. Marked antero-posterior with slight lateral curvature of spine —a line dropping from the seventh cervical vertebra falls wide of the sacrum. No osseous lesion, hence curvature is evidently muscular. When erect this gives him a "sway-back" appearance. No trophic disturbances—joints and bones normal.

Locomotion is effected in a winding, shuffling manner, with the feet rather widely separated, and aided by a cane: the body is bent backward, legs separated so as to widen his base, and the feet lifted and swingingly placed on the ground, with a dropping of the toes. The cane held in the right hand is placed somewhat in the rear of the body. The gait, however, is not typically ataxic, the weight of the body seems to be borne rather on the ball of the foot than on the heel, or entire foot, and is characterized as much by a want of power as lack of control, although incoördination is quite marked. He declares that walking is not especially fatiguing, but he evidently remains standing as much as possible to avoid rising and sitting down. Rising from the sitting posture is markedly difficult and awkward, and is accomplished in this wise: First the chair which he occupies is pushed back to the wall so as to gain a *point d' appui*, then the feet are widely separated, and with the hands supporting the body by resting on the knees, the body in this bent-over-attitude is thrown forward to a chair opposite, which is then seized and the body pulled up in a sort of climbing fashion. The act of sitting down is not so laborious, and is accomplished by an awkward side motion—standing at the side of the chair with the hands resting on the knees, and dropping into the seat sideways.

The use of his arms is also very awkward and uncertain. When carrying the hand to the mouth he first raises the elbow from the side, and then in a circling manner advances the hand to the face. He has some skill, however, in the use of his fingers (forearm muscles)—writes a good hand and is a fair draughtsman. When he crosses his knees he has to lift the leg by means of both hands over its fellow. Knee-jerk absent, and grasp feeble. Tarsal arch somewhat exaggerated, and great toes inclining upward, showing slight contracture. When standing with eyes closed and feet close together there is some swaying (Romberg symptom), but he does not fall, although he is timid about this position. Says he has no particular difficulty in walking in the dark. But with the eyes open he stands without oscillation. However, he is so uncertain and tottering on his feet that when not on his guard the slightest jostle will cause a fall. There is no pain of any sort and has never been. No numbness or localized anæsthesia; and no cramps. Sexual ability said to be moderate. Never suffered from any serious illness. Hearing acute and taste normal. Ocular muscles strong and coördinate. No nystagmus. Pupillary reflexes present (no Argyll-Robertson symptom).

O. D. V $= \frac{12}{xii}$.

O. S. V $= \frac{12}{xii}$.

F. normal. Reads J. I. Chromatic sense undisturbed (Holmgren's test).

Ophthalmoscope (without mydriasis) shows in Oc. Dex. clear media. Refraction H. Disk round, clearly defined, slightly whitened or rather grayish at temporal side, but otherwise well-nourished. Retinal vessels natural in size, course, and color. No striations and no splotches. Macula normal.

Oc. Sin. about as on the right side. Media clear. Temporal side of disk perhaps slightly more gray or whitened. Vessels, retina, and macular region normal. Refraction H.

No electrical examination made. His father recognizes a gradual increase in the progress of the malady.

CASE VI.—Abraham is the eighth child; born in 1870, and is consequently seventeen years of age. He was bottle-fed, but thrived on artificial food, and until eight years old was as healthy, active, robust, and bright a boy as could be found. At this period, however, the approach of nervous trouble became manifest. This, as with his two older brothers, was first evidenced in his gait—consisting in an unsteady, awkward, and staggering walk, associated with fatigue. These symptoms have gradually become more pronounced, advancing upward, and the implication of his arms dates back about five years.

Present condition (April, 1887): Height, five feet four inches; complexion dark; of rather slender build, but moderately well nourished; limbs disproportionately long; thighs, shoulders, and arms small, but muscles not atrophic. On the other hand, forearms and calves of legs of good size and firm. Grasp very feeble. Of ordinary intelligence, but speech not especially quick. No arthropathic changes. Decided antero-posterior spinal curvature (muscular)—a line from the neck falling outside of sacrum. This appearance of "sway-back" is very marked when he walks. Thorax asymmetrical—right side flattened anteriorly and bulging posteriorly and laterally—but no vertebral disease. Foot well arched, perhaps exaggerated, but no contractures. Neither pain, anæsthetic areas, numbness, nor cramps. Gait staggering, unsteady, and incoordinate—walking in a sort of rocking way, and slinging legs along—and stumbles easily. But it is

much more sure and steady than in the case of his brother. He is able to cross his legs without the assistance of his hands, but he slings them over as if they were dead weight. "Foot-drop" marked. Patella reflex scarcely demonstrable. Standing still with eyes closed and feet together is easily accomplished, but body sways both backward and forward and laterally. No oscillation with eyes open. No difficulty in walking in the dark, except the necessary precaution respecting obstacles, which readily cause stumbling. Walking does not induce marked fatigue. Tongue steady and not ataxic. Hearing and taste normal. Action of the sphincters natural. Rising to erect posture and sitting down are accomplished exactly like the same movements by his brother (Case V.), only to a much less degree. He is able to rise by separating his feet, bending his body forward, at the same time supporting it by his hands resting on his knees, and then by a sudden movement, or rather a jerk, of the body forward, he staggers to his feet. Sitting down is done in the side-way fashion as described in his brother's case. Uses hands with apparent ease and facility, and writes a very good but stiff hand. An attempt, however, to carry his hand to his face, although readily done, is awkwardly executed, the same abduction of the elbow and circling motion of the hand being employed. In a word, all the symptoms are exactly those manifested by his brother (Case V.), the only difference being one of degree, and, therefore, are not so pronounced.

O. D. V = $\frac{12}{XV}$.

O. S. V = $\frac{12}{XV}$.

Irides bluish-gray. F. narrowed. Pupils somewhat dilated, and react feebly to light. Accommodation paretic. Reads J. I, with + glass. Extra ocular movements normal. Chromatic sense natural (Holmgren's test).

Ophthalmoscopic examination without mydriasis. O. D. clear media. Macular region normal. Papilla round, grayish, especially temporal side, with obscure edges and slight retinal striations radiating therefrom, and deep physiological cup. Vessels normal in size, course, etc., after leaving disk. Refraction H.

O. S. condition quite similar to right eye. Disk round, grayish-white, moderately clearly defined, and fine retinal striations. Physiological cup. Media and macula normal. Refraction H.

No electrical examination made. The patient believes that there has been no increase in his symptoms in the last two years, but his father notes a gradual but decided progress.

It is not my intention to discuss the theories involved in congenital ataxia. The subject has received already careful consideration at competent hands; and besides, having in view only a clinical report, it will be unnecessary to examine critically the various symptoms which it presents, either in common with or dissimilar to those of the general form of posterior spinal sclerosis. I do desire, however, to give greater prominence to the special features of the present cases than the mere detail of their histories permits, and to this end will pass in review the several points of interest which they offer.

Among those deserving of mention are:

1. The positive history of transmission which establishes their claim to the title of hereditary ataxia. It is essential that the element of heredity should be distinctly indicated in all these cases of so-called Friedreich's disease; but in the majority of the recorded examples this characteristic is absent or, at least, not clearly traced. They are described rather as occurring in families of the same generation, and, therefore, would be more properly termed family ataxia, or congenital, or perhaps early ataxia. Even the now classic cases of Friedreich are not hereditary, but really belong to the family class. Our own cases, however, are well defined. In them the evidence of transmission is prominent, the affection being clearly conveyed from one generation to another, and including three separate families of children. The absence of this necessary hereditary feature in many instances, would suggest the name *family* ataxia as the most appropriate and descriptive designation to embrace the whole class of this division of ataxia.

2. The affinity manifested by the disease for the male line. It is interesting to note that of the six cases all were males, and this, too, notwithstanding the fact that in each of the branches in which they occurred there was a large number of female children (five daughters in one, four in the second, and ten in the third), but in no instance were the girls affected. Furthermore, the transmission was not directly through the afflicted persons, but took place through two sisters—cropping out in their sons. This is not in accordance with the recent statistics of the disease, which, I believe, point to the female line as most frequently affected.

3. The attacking of *all* the males of the two generations who passed beyond the stage of infancy.

In the first generation there were two sons, and both were ataxic; in one branch of the second generation there was only one son, and he became affected, and in the other branch there were six sons, three of whom were paralytic, the other three, however, dying in early infancy, before reaching what might be called the ataxic period.

4. The steady and uninterrupted progress of the disease. There were no lulls or stationary intervals in the course of the malady, but, on the other hand, its march was even and unbroken. Each month and year brought a definite increase of the symptoms until the affection had attained its height and death terminated it. In the cases living (excepting Case III.) this regular advance is still in progress—the disease now passing through the same characteristic and uninterrupted stages.

5. The identity of the symptoms. The peculiar uniformity in the symptoms presented by each of the cases should not escape mention. Of course, the main features of the disease were necessarily alike, but, in addition, the less important manifestations were so exactly the counterpart of each other that a detailed description of one case would almost suffice for all.

6. The apparently definite duration of the disease.

In Case I., ataxic symptoms were first noticed at the age of fifteen, death occurring in his thirty-first year—a period of a little over fifteen years; in Case II., the disease appeared between the years of twelve and fourteen, and death resulted when twenty-eight years old—also a space of about fifteen years. In Case IV., invasion occurred at the age of between ten and twelve years, thus lasting about sixteen years. Cases III., V., and VI., are still living, their ages being twenty-seven, twenty-eight, and seventeen years respectively, in none of whom has the disease yet reached the length of what, in these cases, would appear to be the average duration of the malady.

7. The comparative rapidity with which the disease spread upward, implicating the arms and superior portions of the body.

This feature is noteworthy in that it is at variance with the usual progress of the ordinary or Duchenne variety of ataxia. In the latter the invasion of the upper extremities is decidedly slow, and, in many instances, they even escape all involvement. In all of the present cases, however, the arms became early and rapidly affected.

8. The ages. Friedreich declared that its appearance was concurrent with the approach of pubesence, but many recorded instances have demonstrated such to be a mistaken belief. In our cases, puberty was certainly neared; the earliest notice of appearance was the eighth year, the others occurring between the ages of ten and fifteen.

9. The absence of pain and other sensory disturbances. This is well exemplified here, being also one of the important and distinctive features of family ataxia, in contradistinction to the invariable presence of the lightning pains and certain other sensory phenomena in regular locomotor ataxia.

10. Spinal curvature was an early and positive symptom in Cases III., IV., V., and, from the description obtained, was doubtless equally so in the other two. Spinal curvature is a frequent associate of this type, and it has been stated that the lateral bend is more often encountered, although the combined lateral and angular is not infrequent. In three of our cases the angular curve was alone present, and in one there was a combination of the angular and lateral. In the other two (Cases I. and II.) antero-posterior curvature probably existed.

11. The moderate wasting of the calf and fore-arm muscles was well marked. There was, of course, decided nutritional changes in these muscular groups, but, in comparison with those of the thighs, arms and shoulders, the atrophy was noticeably less. I have not seen any reference to this feature elsewhere, but in the present case it was sufficiently marked to furnish ground for comment.

12. In the cases personally examined by me there were no extra-ocular disturbances, and none were apparent to the ordinary observer in the other cases of the group.

Intraocular lesions were undoubted, however, in two cases, and in one of these there was also slight mydriasis, with cycloplegia.

13. The marriage of blood relations. This is not the place to discuss what effects may be entailed upon the offspring resulting from consanguineous unions, or, if such result, the character of these influences. It is only necessary to refer to the fact that, in the present instance, first cousins married. These persons were both vigorous and healthy, and, as far as known, possessed a family history free from all nervous or other troubles. Therefore, it is justifiable, at least, to consider that with this union were brought together or originated those causes which produced the disease, since it was manifested in a progressive and uniform manner in the two succeeding generations.

REPORT OF A TOXICOLOGICAL EXAMINATION OF FIVE BODIES IN CASES OF SUSPECTED SATURNINE POISONING BY LEAD CHROMATE.

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WITHIN the past few months this community has been thoroughly aroused by the discovery of the very extended adulteration of buns and other cakes by certain bakers in the northern section of the city with *lead chromate* (the *chrome yellow* of painters), as a cheap substitute for eggs, on account of the yellow color thereby imparted to the dough. Quite a number of persons have been fatally poisoned through this practice, whilst many others have been seriously affected; and all have exhibited, more or less, the characteristic symptoms of chronic lead poisoning—such as abdominal pains of greater or less severity, nausea, vomiting of greenish-yellow matters, obstinate constipation, pains in the joints, limbs, and head, furred tongue, fetid breath; and in many of the cases severe convulsions, which appeared to be the immediate cause of death. The characteristic blue line at the junction of the teeth and gums was observed in several of the cases, both fatal and non-fatal. A somewhat singular fact relating to the fatal cases is that none of them exhibited signs of paralysis—especially of the extensor muscles of the hands, constituting the well-known *wrist-drop;* whilst, on the other hand, the eclamptic symptoms were more pronounced than is usual.

In one single family—that of the very baker who employed this poisonous adulteration most extensively in his business, and whose "buns" were the means of dealing out death to many others—no less than seven members were affected, all of them fatally. In another neighboring family of nine persons, six had eclamptic attacks, four of whom died.

This system of wholesale poisoning seems to have been going on quite unsuspectedly for some years in that particular section of the city; though subsequently, it has transpired that other districts have been similarly affected. One member after another of a family would fall sick, languish for a longer or shorter period, and finally die. And inasmuch as the convulsions constituted such a prominent symptom—these often coming on suddenly and unexpectedly,—the attending physicians appear very naturally to have been mistaken in their diagnosis, and the unfortunate sufferers were treated for other supposed disorders. Finally, however, in one of the

families above mentioned, after the death of two of the children, Dr. David D. Stewart was called in to visit a third child, fifteen months old, who like the preceding ones, had been suffering from a mild attack of pertussis. This child had a number of convulsions for several successive days, but he finally made a good recovery.

Within a few weeks another child, aged seven and a half years, after some slight general ailing, was suddenly, and without premonition, seized with severe general convulsions, which shortly terminated in coma and death. Dr. Stewart did not see this patient until some time after the first convulsive seizure, and at that time could have no suspicion as to the true origin of these attacks. Four other members of this family were subsequently attacked with similar symptoms—one, a girl of twelve years, fatally, the death being preceded by intense headache and severe continued convulsions.

Very naturally, such a continued series of cases, occurring in the same family, and presenting such similarity of symptoms, led the physician to suspect some other cause than the mere supposed digestive disorder, or the early whooping-cough, to account for these violent and fatal seizures; and by prompt and skilful investigation he was enabled to trace them to their true origin—*saturnine poisoning*, derived through the continued use of "tea" and "cinnamon buns," which had been procured from a neighboring baker, who was in the habit of adulterating his dough with lead chromate as a cheap coloring substitute for eggs!

Dr. Stewart further discovered that this same baker had within the past two years lost a wife and six children in convulsions, and that lead-poisoning had been suspected to be the cause of death in most of these cases; and further, that a journeyman baker in his employ had been seized with lead colic, and been forced to leave him.

Singular to say, although the circumstances attending these different cases were so peculiar and suggestive, the true cause of all this wholesale poisoning was never discovered until Dr. Stewart's thorough investigation revealed it (see THE MEDICAL NEWS of June 18, 1887, p. 676). He took some of the suspicious yellow coloring matter to his friend, Dr. Leffmann, who at once pronounced it to be lead chromate; and who subsequently detected the poison in samples of the "buns" sent to him for analysis.

The matter now fell into the hands of the Coroner. Some autopsies of the bodies had been previously made at different times by the Coroner's physician; but in the absence of any suspicion of lead-poisoning, the mere post-mortem could not, of course, reveal the true cause of death. This officer at once commenced a thorough and elaborate investigation. Four of the bodies of the victims were disinterred. Two of these had been buried about two years; one about five months; and one a little over one month. As analyst to the Coroner, it became my duty to make the toxicological examination of these cases, with the view of discovering the presence of the suspected lead in the remains. Dr. Henry Leffmann, Port Physician of Philadelphia, who had previously analyzed the colored matter found at the baker's, and also some of his buns, was associated with me in this investigation. We made our experiments upon the different viscera conjointly, and always in each other's presence, so as to be able to substantiate the results in every instance. Some of these viscera were in a highly putrescent condition, but were still capable of proper manipulation.

The process adopted by us was the following: The organ to be examined was first divided into fragments and carefully dried by exposure to heat—a process often requiring many hours to accomplish. It was next heated to full redness in a porcelain capsule over a gas-furnace, until it was completely incinerated. This process also was very tedious, often consuming considerable time, and even then, not always attaining the desired end. We found it generally necessary to make several successive additions of small quantities of nitric acid, for the purpose of effecting the more complete destruction of the organic matter. In fact, we ascertained that in a lead-analysis of this character (and the same is doubtless true of copper and other non-volatile metals) it is not sufficient merely to carbonize the material, however thoroughly this is done; but the carbon must be completely reduced to ash, in order to separate the contained metal by subsequent solution in dilute nitric acid. As has been previously pointed out by others, we found that the animal charcoal, under these circumstances, retains the lead with great tenacity, refusing to part with it even when heated in the acid solution. So that, unless special care is exercised by the chemist to insure the *thorough* incineration of this carbonaceous matter, he may entirely fail to recover the poison sought for. As already remarked, this complete incineration required a long and tedious attention on the part of the analyst.

The ash thus obtained was next dissolved in dilute nitric acid at a moderate heat; filtered, evaporated to dryness, and again dissolved in distilled water: it was now ready for the different tests for lead, which gave us the following results:

(1) *Sulphuretted hydrogen* threw down a black precipitate (lead sulphide); this was further corroborated by dissolving the precipitate in dilute nitric acid by the aid of heat; evaporating to dryness; again dissolving in distilled water, and testing the solution by some of the other appropriate reagents, which yielded satisfactory results.

(2) *Dilute sulphuric acid* yielded a white precipitate (lead sulphate), soluble in larger excess of potassic hydrate.

(3) *Potassic hydrate* threw down the white hydrated lead oxide, soluble in an excess of the reagent.

(4) *Potassium iodide* gave the characteristic precipitate of the yellow iodide of lead. This was further corroborated by its solubility in hot water, and by the distinctive six-sided crystalline plates, as seen under the microscope.

(5) *Potassium bichromate* yielded the yellow precipitate of lead chromate.

(6) A fragment of pure metallic *zinc* placed in the solution was speedily coated with bluish colored crystals of metallic lead.

There are a few other tests of minor importance, which we did not deem it necessary to employ.

The following are the actual results of our experiments upon the different viscera submitted to analysis:

CASE I.—Amelia D., aged twelve years. Health failing since the beginning of the present year, but only decidedly ill for a few days before death, on May 13th. The only organs submitted to us were a small portion of the upper part of the spinal cord, a kidney, the heart, and the lower jaw. The fragment of the *spinal marrow* (about nine inches in length) examined in the manner above described, yielded traces of lead to several tests. The *kidney* also afforded evidences of its presence by the sulphuretted hydrogen and zinc tests. The *heart* gave no appreciable results; and the same is true of the *lower jaw*. Unfortunately, in this case the stomach and liver had been previously removed.

CASE II.—Louisa D., sister of the preceding, aged three and one-quarter years. Had a mild attack of pertussis since January; became seriously ill about January 23d, with vomiting; died in convulsions on January 24th. The viscera submitted to examination were the stomach, with a small portion of the small intestine, one-quarter of the brain, one-quarter of the liver. The *stomach* and fragment of *intestine*, treated as above, yielded evidence of the presence of lead by the sulphuretted hydrogen (corroborated subsequently) and the zinc tests. The portion of the *liver* gave decided results with the sulphuric acid, sulphuretted hydrogen, potassium iodide, potassa and zinc tests. The portion of *brain* afforded us slight, though unequivocal evidence of the presence of lead in this organ, especially by the sulphuretted hydrogen test, subsequently corroborated.

CASE III.—George P., aged twenty-four years, died January 23, 1886, in the Philadelphia Hospital after (as was supposed) an epileptic seizure. This was one of the children of the baker above alluded to. The *liver*, which had been well preserved in alcohol, was treated as above mentioned, and afforded most decided evidences of the presence of lead when subjected to the sulphuric acid, sulphuretted hydrogen (corroborated), iodide of potassium, hydrate of potash, and zinc tests.

CASE IV.—E. L. P., sister of the preceding, aged twenty years, died December 13, 1885. A portion of the *liver* (one-quarter) was treated according to the before-mentioned method, and yielded on the first incineration no evidence of lead, but only a considerable quantity of oxide of iron. The result of a second and more perfect incineration indicated a slight trace of lead; and one *kidney*, treated as above, yielded very positive indications of lead by means of the sulphuretted hydrogen, potassium iodide, and sulphuric acid tests.

CASE V.—Besides the above four cases of the disinterred bodies, there were also submitted to us for analysis some of the viscera of the child A. E. H., aged six and one-half years, who had died quite recently (June 25th) after partaking of "buns" purchased from another baker living over a mile distant from the former one. One-quarter of the liver and spleen were examined together, and the ultimate solution afforded us very positive proofs of the presence of lead in these viscera, when subjected to the above-mentioned tests, especially sulphuretted hydrogen, potassium iodide, and sulphuric acid.

The point of most interest in the above cases—physiologically and toxicologically considered—is probably the fact of the detection of lead after death in the two great nervous centres, the brain and spinal cord.

It has been asserted by some who have experimented with this poisonous metal on the lower animals, that it has a special affinity for these organs, and that it was found after death in them in greater abundance than even in the liver. The results of our experiments upon the human subject, as above detailed, do not confirm this statement, but, on the contrary, show that the liver, as a general rule, contains more of the absorbed poison than any of the other viscera; and they point to this gland as the great eliminating organ for poisons from the human body.

It is to be regretted that no opportunity was afforded us for testing the urine in any of these cases. Unfortunately, no test of this secretion was made during life. Doubtless, if it had been done, evidence of the presence of the poisonous metal would have been detected. The examination of the urine should never be neglected during life in a case of suspected mineral poisoning, since its presence in this secretion may almost certainly be discovered, in a genuine case, by the appropriate chemical tests.

INFLUENCE OF TROPIN HYDROCHLORATE AND SODIUM TROPATE ON THE BLOOD-VESSELS OF THE DOG,

ACCORDING TO AN IMPROVED METHOD.

BY H. G. BEYER, M.D., PH. D.,

PASSED ASSISTANT SURGEON, U. S. N., FELLOW BY COURTESY OF THE JOHNS HOPKINS UNIVERSITY.

BY a careful, experimental study of atropine on isolated organs, we have been able to furnish good pharmacological evidence in proof of the fact that this alkaloid exerts a double action on those organs which are supplied by both motor and inhibitory sympathetic nerve-structures. It has been shown that very small doses of the drug will stimulate the motor nerve-elements, and that large doses of it will stimulate the inhibitory portion of the nerve-supply of these organs.

Thus, very small doses of atropine give rise to contraction of the pupil, to acceleration of the heart's action, and to increased peristalsis of the intestine; large doses, on the contrary, produce dilatation of the pupil, arrest the heart in diastole, and stop the peristaltic movements of the intestine.

In view of the researches of Ladenburg, on the chemical constitution of atropine, it seemed to me very desirable to try and ascertain if this double action of atropine could possibly be explained by a careful study and comparison of the action of its two constituents, *tropin* and *tropic acid*.

It will here be necessary to recall briefly a few of the more essential points of interest as regards the chemistry of atropine.

Some years ago, Kraut and Lossen succeeded in splitting up the alkaloid atropine into its two constituent molecules. Lossen, more especially, succeeded in showing that the decomposition mentioned went on according to the following equation: $C_{17}H_{23}NO_3 + H_2O = C_8H_{15}NOC_9 + H_{10}O_3$. Finally, Ladenburg, in 1881, produced atropine by synthesis from tropin and tropic acid, by first neutralizing a solution of tropic acid with tropin, thus producing tropin-tropate; then boiling this compound with a small quantity of HCl in a sealed tube.

The result of this procedure was a substance absolutely identical with atropine obtained in the natural way from the plant, in all its chemical and physiological properties. The chemical identity of this substance was established by Ladenburg himself; the physiological experiments necessary were made by Professors Hensen, Völkers, and Falck.

According to the same method, Ladenburg now undertook the manufacture of certain other substances to which he gave the name of *tropeïnes*, but which are in reality atropines in which the tropic acid molecule was replaced by a molecule of some other suitable acid. Many of these so-called tropeïnes were in this manner produced, but the consideration of a few will perhaps suffice for our purpose. (1) Homatropine is one of the best known tropeïnes, and in it tropic acid has been replaced by amygdalic acid; one of the chief characteristics by which it may be distinguished from atropine is its effect on the pupil, which is much less permanent, though equally as pronounced as, in the case of atropine. (2) Salicyltropeïne, made, as its name implies, by substituting tropic acid by salicylic acid, has, according to experiments made by Prof. Falck, no effect whatever on the pupil; it is said to be a weak poison, affecting especially rabbits very slightly indeed. (3) Oxybenzoyltropeïne has a certain effect on the pupil, lasting, however, but a very short time, and its action is much less pronounced than that of atropine, according to experiments made by Prof. Völkers. (4) Cinnamyltropeïne, made by substituting tropic acid by cinnamic acid, while it was found to be a strong poison, ½ a grain killing a frog in three minutes, had no appreciable effect on the pupil whatever. It will be seen, then, that with the replacement of the tropic acid molecule in atropine by a molecule of other acids, a very decided modification in its effects on the pupil is thus produced, and the inference, therefore, was quite a natural one, that there exists a certain definite physiological relation between this molecule and the dilatation of the pupil.

Active dilatation of the pupil, however, is produced by the stimulation of certain nerve-structures, belonging, according to Gaskell, to the class of inhibitory nerves, considered both physiologically as well as histologically.

From the results I obtained in some investigations on the direct action of the members of the atropine group on the heart and bloodvessels, I was led to believe that they all exhibited a stimulatory influence on both inhibitory and motor nerve-structures. It was found that the administration of small doses of atropine was accompanied by phenomena indicative of vasomotor nerve-stimulation, and that of larger doses by phenomena indicative of inhibitory nerve-stimulation. These results, as well as those obtained by Professors Hensen, Falck, and Völkers, suggested to me the possibility of finding an explanation for this double action of atropine in a further study of the action of its two constituents, tropin and tropic acid.

The pupil did not seem to me a sufficiently typical object for the determination of this all-important point, and I, therefore, concluded to try the bloodvessels, which seemed to me particularly well adapted to this end, since it is now looked upon generally as a well settled question in physiology that they are supplied by two kinds of sympathetic nerve-structures, namely, vaso-motor and vaso-inhibitory, the stimulation of the former causing vaso-constriction, that of the latter giving rise to vaso-dilatation.

From what has been said so far, we may argue that if tropic acid is that part of atropine which causes pupillary dilatation, and if we have, furthermore, reasons to believe that tissues which are identical, both in histological structure and physiological function, are also similarly affected by the same chemical stimuli, then certainly it ought to follow that this same part of the atropine molecule should give rise to vaso-dilatation. Atropine, however, producing also vaso-constriction, in certain doses at least, it would perhaps further follow that the remaining portion of the molecule should give rise to vaso-constriction.

It is plain that for the purpose of deciding so very delicate and important a question, the employment of the best available method of experimentation was necessary. That employed by Prof. R. Kobert, in his experiments "on the Influence of Pharmacological Agents on the Bloodvessels," as published in the *Therapeutic Gazette* for January, 1887, is briefly as follows:

The particular organ under experimentation (in most instances the kidney) was removed from the body of the animal, kept at the proper temperature by means of a properly constructed heat-chamber, and provided with the necessary canulas for transfusion experiments. The blood, always coming from the same animal or another one of the same species, was likewise kept at the animal's temperature by the same means; it was then arterialized by shaking it in a bottle containing air, and made to flow from Mariotte's flasks from a height corresponding to the normal arterial pressure of the animal during life. After the flow of blood through the organ had become uniform, poisoned blood was substituted for normal blood, and the condition of the vessels simply inferred from the change which took place in the outflow.

Most valuable results, no doubt, are obtained by means of this method, but still there are certain objections clinging to it which are as undeniable as they are difficult to remove. The latest achievement as regards improvement in method has been effected by Drs. von Frey and Gruber. (*Du Bois-Reymond's Archiv*, 1885, pp. 519–533.)

In Kobert's experiments, as mentioned above, the blood was arterialized by shaking it in vessels containing air, and its flow through the bloodvessels was uniform and uninterrupted.

It has been found that under these conditions, the blood corpuscles tend to settle and clog up the finer capillaries, and the blood, as it becomes more and more venous by standing, gives rise to contraction of the arterioles and capillaries, and, therefore, the necessity of gradually increasing the arterial pressure as the experiment proceeds, in order to maintain a uniform flow through the bloodvessels may be sufficiently accounted for by these two conditions.

In order to overcome these difficulties, von Frey and Gruber constructed an apparatus intended to establish a uniform and steady arterialization of the blood on the one hand and a flow of blood on the other, which would be more like that occurring in the normal intact animal. For the purpose of arterializing the blood, the apparatus was so arranged as to allow the blood to be spread out in thin layers over the walls of glass vessels containing air, from which it could take up any desirable quantity of oxygen and give off a corresponding amount of carbon dioxide. The blood thus arterialized, was collected and forced into the bloodvessels by means of a pressure and suction-pump, which was so arranged that when at work it somewhat resembled the heart's action. In other words, an ingenious attempt has been made by von Frey and Gruber to overcome the objections adherent to the old method by means of an artificial heart and an artificial lung.

In the method made use of in the experiments to be here described, a *natural heart and lung* were interposed between the blood reservoirs and the bloodvessels of the organ under observation, the arrangement being very simple and briefly as follows: The operation consisted in first isolating the heart and lungs of a dog and placing them in proper working order exactly as was described in connection with some experiments on the isolated heart published in the *American Journal of the Medical Sciences* for April, 1887. The outflow-tube, however, had a T piece inserted into it, close to its origin from the common carotids; two branches of this T piece being of course in the tube, the third branch was connected with the femoral artery by means of a rubber tube and glass canula of about the diameter of that artery.

The pressure against which the heart pumped its blood being made equal to that of the animal during life, that of the femoral artery under these conditions was exactly the same, as was ascertained by a mercury manometer, and pulsations could be distinctly felt in the limb.

Everything being arranged in good working order, a constant and uniform flow of blood through the limb was soon established; the blood being collected from the femoral vein and measured at stated intervals. The vena cava inferior, furthermore, having been previously tied above the liver when the heart was isolated, any loss of blood was prevented and only that portion of the limb was kept in circulation which corresponded to the area of distribution of the common femoral artery.

After the amount of outflow had become uniform, the drug was slowly injected into the femoral artery, and the condition of the vessels simply inferred from the change which took place in the outflow during and immediately after the injection was made.

The advantages of this method over the old, must, I think, be quite apparent to any one. Every drop of blood which flows through the organ is in the first place arterialized by the natural lung of the animal, exactly as it is under normal conditions, and besides, being pumped into the bloodvessels by the heart of the same animal, it really enters and flows through the vessels under the same conditions which prevail in the normal intact animal during life. Furthermore, the drug not being allowed to flow through the heart, both its rate and work were not interfered with, but remained uniform as long as the blood was good. The amount of work done by the heart formed an easy guide as to the condition of the blood, and as soon as a decided decrease took place the experiment was at once discontinued.

The drug was invariably dissolved in a small quantity of normal salt solution and injected into the femoral artery by means of a fine hypodermatic syringe, the injection lasting from between 20 to 30 seconds each time. Dog's blood had to be used in every instance, for, although very young sucking calf's blood had been found to enable the heart itself to perform normal work for a short time, it was, on the contrary, found absolutely impossible to obtain a current through the kidney or limb of the dog by means of other than dog's blood.

In the twelve experiments which were made in this manner, in not a single instance did œdema of either lung or limbs occur, which is an almost invariable occurrence when strange blood is used. The quantity of blood, which is generally obtained by bleeding four large-sized dogs, until marked changes in respiratory movements set in, is amply sufficient for an experiment of this kind. Dogs, bled at intervals of two weeks, may thus be used several times.

From our experiments we are justified in drawing the following conclusions, namely:

1. That tropin hydrochlorate gives rise to vaso-constriction by exciting the vaso-constrictors, and 2, that sodium tropate causes vaso dilatation by exciting the vaso-dilator, nerve elements.

On account of the small quantity of these substances at our disposal, no detailed experiments have as yet been made on other organs, but it was found in one instance that a small quantity of sodium tropate introduced into the heart, caused almost instantaneous diastolic arrest of that organ.

In concluding, I have to acknowledge my indebtedness to Mr. Lengfeld[1] for the preparation of the chemicals made use of, and also to Prof. H. Newell Martin, in whose laboratory these experiments were performed.

LARGE TUMOR OF THE RIGHT FRONTAL LOBE WITHOUT THE PRESENCE OF ACTIVE SYMPTOMS.[2]

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JOHN S., aged eight, was admitted to the surgical ward of the Children's Hospital August 31, 1886. The father is living and apparently a perfectly healthy man. From him no history of syphilis could be obtained. The mother died of phthisis. This boy with two others composed the family, one older and one younger, and both healthy children. The patient's illnesses previous to the date of his admis-

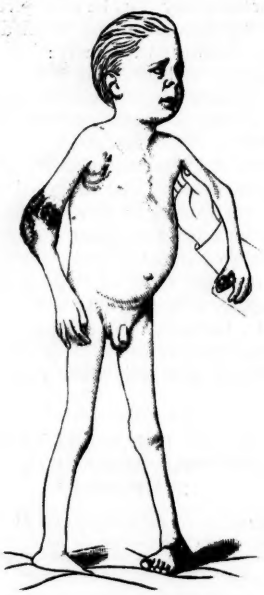
[1] Of the Chemical Laboratory at the Johns Hopkins University.

[2] Read before the Philadelphia Pathological Society, May 26, 1887.

sion were measles, whooping cough, and smallpox. Three years ago swelling of the left ankle began, and a few months later of the right elbow. There is no history of injury to account for the joint affections.

His condition on admission was the following: All the superficial lymphatic glands were much enlarged. The right elbow was enormously swollen, tender, and of a dusky red color. Several sinuses opened on the surface and led down to the joint, which was advanced in disease. The left ankle presented the same condition as the elbow. The tarsus was extensively carious, and there was decided acquired talipes varus. The left thumb was swollen, red and tender, and presented the appearances of syphilitic dactylitis. There was a large broken-down area below each axilla. The teeth were irregular and the cutting edges of the central incisors markedly serrated. In October, 1886, Dr. John Ashhurst excised the right elbow-joint and amputated the left thumb. The patient soon recovered sufficiently to be out of bed. In March, 1887, Dr. Samuel Ashhurst made a partial resection of the left tarsus. The child did well until May 14th, and never showed any symptoms of brain disease.

FIG. 1.



Photograph of child showing the diseased ankle, elbow, and thumb, also the broken-down area below the axilla.

On the morning of this date he was unusually irritable, and during the dressing of his foot apparently suffered pain; afterward until 1 o'clock he lay in a stupefied, though not unconscious state. Then, while being helped to a bed-pan, he was seized with a convulsion, which is thus described by the attending nurse. The convulsive movements began on the left side and were most marked in the face, neck, and arm, with later involvement of the chest and leg muscles. The members of the right side were not quiescent, but were convulsively elevated and drawn toward the median line. The eyes and head were violently turned toward the left side. The convulsion lasted three minutes, and after its cessation the following conditions obtained: There was complete right-sided hemiplegia and contractions of the left side with the production of a typical "claw-hand." Attempted movement of the limbs of this side was resisted in every direction. Neither anæsthesia nor hyperæsthesia existed, although apparently sensation was more acute upon the left side. The pupils were dilated unequally, the left measured seven millimetres and the right five millimetres in the presence of candle-light. There was marked conjugated deviation of the head and eyes to the left. A slight lateral nystagmus was occasionally manifest. The respirations varied; at times they were typically Cheyne-Stokes, at other times deep and almost sterterous, and again, short and gasping. The urine was free from albumin and sugar and deposited freely triple phosphate crystals. Numerous convulsions succeeded the first one, which was the most severe. They were observed by Dr. Morris J. Lewis, by the house-surgeon, Dr. Harvey Shoemaker, and by myself as follows:

The convulsions began on the left side with a spasmodic closure of the eyelid and twitching of the face, neck, arm, and leg. The convulsive wave then rapidly passed to the members of the right side, which were in turn convulsed and drawn toward the median line. These convulsions became milder and milder, until before death they consisted simply of twitchings confined to the left side.

On the evening of the day on which these manifestations began I examined the eye-grounds and found double optic neuritis. The edges of the disks were hidden by the swollen retinas, the surfaces of the elevations were gray-white, and there was wide distention of the lymph sheaths. The veins were full and tortuous, and the arteries by comparison small. No hemorrhages were noted. Death took place thirty hours after the first convulsion with no changes in the symptoms detailed, except a gradual failure of the pulse and several hours before death contraction and equalization of pupils to two millimetres.

Autopsy, six hours after death.

Body of an exceedingly wasted male child. General lymphadenoma; in the groin bunches above and below Poupart's ligament. Submaxillary and axillary glands all enlarged, those in right axilla suppurating. Excision of the right elbow-joint and tarsectomy of the left ankle. Enlarged gland just above the head of the left radius; trochlear glands enlarged.

Thorax: Partly calcified and enlarged lymph glands in the anterior mediastinum under the manubrium. Bronchial glands of the posterior mediastinum very large and cheesy, the entire group of bronchial glands presented this condition and scarcely any trace of gland tissue remained. Those most affected lay immediately anterior to the right bronchus. *Lungs:* A few adhesions at the right apex.

Lungs crepitant throughout; at apices a few small nodules, and here and there on the pleural surfaces were scattered fibroid and calcified tubercles. There were *no caseous areas*, except in the right lung, between the middle and upper lobes, a small partly cretaceous and caseous mass. *Pericardium and heart:* Pericardium smooth. Right heart dilated and full of clots, in the left the blood was fluid. All valves normal.

Abdomen: No peritoneal tubercle. *Liver:* Large, firm, the larger vessels distended. No gross changes noted. *Spleen:* Much enlarged, its hilus occupied by four or five caseous lymphatic glands to which was attached the tail of the pancreas. The body of the pancreas was normal. Section showed no tubercles in the pulp of the spleen, which was soft. *Kidneys:* Large, veins full, cortices opaque in places.

Stomach and intestines: Stomach almost empty and mucosa showed no changes. In the ilium several of Peyer's patches swollen and firm, but not distinctly ulcerated. Mesenteric and retroperitoneal glands all enlarged and cheesy.

Brain and membranes: Head large, symmetrical. Skull cap thin. Dura not adherent, smooth and very tense. The convolutions were swollen, sulci narrow. Gray matter not specially congested.

Inspection of the base: The right hemisphere looked larger than the left, particularly the frontal lobe, which, on separation of the longitudinal fissure, projected considerably beyond the median line, depressing the left median convolutions. On the under surface of the right lobe at the anterior part of the inferior frontal convolution there was a grayish white mass, which measured superficially 3 cm. in diameter. The posterior part of the third convolution was soft and œdematous, and this condition existed in a less degree throughout the orbital gyri. On separating the operculum a firm, solid mass existed immediately outside the root of the olfactory nerve at a point corresponding to the junction of the third right with the anterior gyrus of the insula: Further dissection revealed that this mass occupied two or three of the anterior gyri of the insula. The right middle cerebral artery ran over it, and its branches looked smaller than the corresponding ones on the left side.

There was no special matting of the pia over this mass. The optic nerves were firm and there was wide distention of their sheaths behind the globes. The optic tracts were spread as they passed over the crura. Over the pons and medulla the pia was thickened and infiltrated. The cerebellum was removed by cutting through the crura and was normal. The lower part of the *left crus* was in a condition of hemorrhagic infiltration, and there was a hemorrhagic exudate on the posterior end of the *left thalamus*. The pia, as it dipped in here, was matted and infiltrated. Pons and medulla showed no changes. The ventricles and ependymal veins were distended. In the right lateral ventricle a large grayish white mass was apparent, which occupied the head of the caudate nucleus, the body of which was œdematous. This œdematous condition extended to the anterior portion of the thalamus. No other lesions were found.

Dissection of the tumor region: After hardening the right half of the brain in alcohol, a careful dissection of the tumor region was made. The tumor extended from about half an inch of the tip of the

FIG. 2.

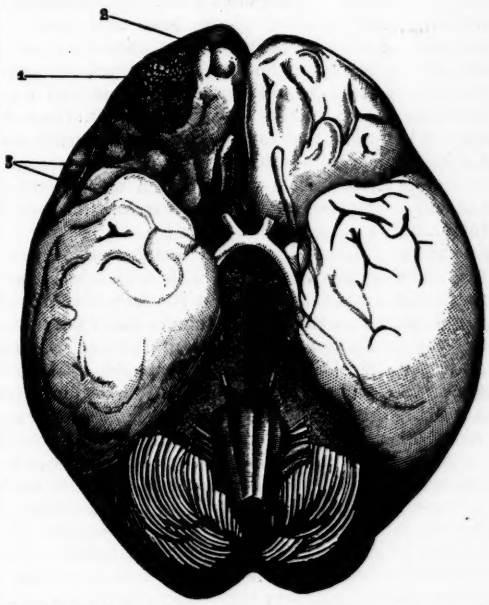


Plate showing base of brain; 1, exposed part of the tumor; 2 and 3, areas of œdematous brain tissue.

frontal lobe to a point corresponding to a section through the bases of the first and second frontal convolutions, about one inch anterior to the fissure of Rolando. Anteriorly it occupied the greater part of the white matter of the lobe, and came to the surface at the junction of the third frontal with the orbital gyri. Its depth was about two and a third inches. It consisted here of two tumors, the larger below, and the smaller above, separated by soft brain tissue. As it passed back it reached the orbital surface, and was apparent immediately behind and external to the root of the olfactory nerve. Its posterior limit was three and a half inches from the tip of the lobe. Section through the prefrontal sulcus showed that here the thalamus and caudate and lenticular nuclei were uninvolved, except one small spot of reddish softening at the top of the lenticular nucleus. The internal capsule was firm and natural. From the ventricular surface the tumor extended to the head of the caudate nucleus, and the parts immediately behind it were softened as far back as the thalamus. Microscopic examination of the tumor showed the presence of tubercle. Attempts to demonstrate tubercle bacilli failed. As before stated, the lesions on the opposite side of the brain were hemorrhagic infiltrations, which occupied the lower divisions (crusta) of the left crus and the posterior end of the left optic thalamus.

REMARKS.—The points of interest in the case which I have just detailed are manifestly the following: A large tumor, 3½ inches long and 2⅓

inches deep, occupied the white matter of the right frontal lobe as far back as the bases of the first and second frontal convolutions, and from the ventricular surface involved the head of the caudate nucleus, and by softening the structures as far back as the thalamus, and yet was practically, if not entirely, quiescent. The convulsions, the hemiplegia, the conjugate deviation of the head and eyes, in fact all the cerebral manifestations that were present during the thirty hours which elapsed between the first convulsion and death, were evidently due to the fresh hemorrhagic lesions in the left crus and on the left optic thalamus. The optic neuritis, on the other hand, must have been present for some time before its discovery, indeed, it was probably the only symptom of the presence of this brain tumor.

The fact that optic neuritis was present in connection with this tumor of the frontal lobe is further interesting, inasmuch as it has been stated that it is just in this region that tumors may exist without the production of changes in the end of the optic papilla. Dr. Gowers has well said, "Morbid appearances in the eye are frequent in intercranial disease, and often prove the existence of such disease when other symptoms are inconclusive, or afford evidence of its nature that can be obtained from no other source." The conjugated deviation of the head and eyes, was in this case as it is in a majority of instances, toward the lesion which produced the symptoms and away from the paralyzed side. The very reverse of this has been noted, and in Prevost's collection of cases, in three such exceptions, the lesion was found in the peduncles of the cerebrum or cerebellum. Here there was a hemorrhagic infiltration into the crus cerebri, but the usual order obtained. This tumor, faithful to its location in the so-called inert zone, produced no symptoms, and was besides too extensive in its invasion of the brain substance to have added any material or accurate data to the knowledge of localization. For the very reason of its quiescence, however, it has seemed to be a useful and interesting case to report, especially in connection with the fresh and active lesions upon the opposite side of the brain.

I am indebted to Dr. John M. Taylor for the drawing of the base of the brain, and to Dr. Randall for the photograph of the child. Dr. William Osler kindly aided in making the autopsy and the subsequent dissection of the brain.

1330 SPRUCE STREET.

THE INFLUENCE OF COCAINE ON THE PUPIL AND CORNEA.[1]

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AFTER a watery solution of cocaine is instilled in the conjunctival sac, there occurs, first, a slight contraction, and then a more pronounced and prolonged dilatation of the pupil. When a drop of the four per cent. solution is used, the contraction comes on with the widening of the palpebral fissure and the anæsthesia of the cornea and conjunctiva, within two or three minutes, and lasts for five or ten minutes, when the pupil resumes its normal size. This contracture, like other delicate reactions of the pupil, is to be satisfactorily observed only by studying the eyes of a young person with equal, mobile pupils, one of which is kept normal as a standard of comparison, while the other is subjected to experiment. And such a study is best made with the accommodation of the observed eye entirely relaxed, and in a rather dim light. These are the conditions, too, that enable one to determine most accurately when the dilatation begins. This is between ten and twenty minutes after the instillation. The maximum of dilatation is reached about the end of the first hour, and an hour later it has sensibly begun to decline; but the return to the normal is not complete for some twelve to twenty-four hours. During the whole period of dilatation the pupil reacts freely to light, often almost as freely as when in the normal condition; and there is almost the usual extent of consensual contraction, with accommodation and convergence. Then, at any time, the dilatation, even that produced by the strongest solutions frequently instilled, may be promptly cut short by the use of eserine.

Frost[1] states that one part of eserine will neutralize twenty-five parts of cocaine in its effect on the pupil. From a series of experiments made upon my own eyes, and those of six other healthy persons varying in age from four to thirty-three years, and unrelated, so that family idiosyncrasy cannot account for the result, I have found that it requires but one part of eserine to overcome the influence of some fifty or sixty parts of cocaine. Strictly speaking, they do not in any proportion exactly neutralize each other. But, when a solution containing one part of eserine to fifty of cocaine is dropped into the eye, there is usually, at the end of fifteen minutes, a slight dilatation of the pupil which lasts but a few minutes, and which may be absent, or may persist rather longer. This is invariably succeeded by a contraction of the pupil, at least when exposed to a good light, which lasts for from one to four hours, and is followed by a normal pupil, or a slightly dilated pupil passing into the normal some hours later.

When, under the influence of these combined drugs, the pupil is about passing from dilatation to contracture, or *vice versa*, and often throughout the whole period of their influence, the pupil subjected to it will contract more strongly than its normal fellow when the eyes are exposed to a bright light, or are strongly accommodated, yet will dilate more widely than the normal in a weak light with the accommodation in abeyance. This illustrates the fact that these two drugs cannot be made to neutralize each other exactly. It might be mentioned in passing, that when the action of eserine on the pupil has been neutralized or overcome by cocaine, its action on the accommodation remains well marked. In every case that could be tested as to this point, in which the mixed solution, eserine sulphate 1,

[1] Read before the College of Physicians of Philadelphia, June, 1886.

[1] American Journal of the Medical Sciences, April, 1887.

cocaine hydrochlorate 50, water 2000, was used, the range of accommodation was markedly extended. In my own case this extension amounted to two dioptres; in another it was fully three dioptres.

Because it leaves the pupil still responsive to light, and its mydriasis is easily overcome by eserine, cocaine is looked upon as a weak mydriatic. Yet with it we may readily attain a perceptibly wider dilatation of the pupil than with homatropia, atropia, duboisia, daturia, or hyoscyamia, either of which can effectually prevent any contraction of the pupil by eserine. My attention was first arrested by this power of cocaine some two years ago; I have tested it very many times since, and have never yet failed to get perceptibly greater dilatation of the pupil with cocaine than with any of the otherwise "stronger" mydriatics. It may be tried in this way: both pupils being under the influence of repeated instillations of a strong solution of another mydriatic and found equal, a drop or two of a four per cent. solution of cocaine is instilled in one eye, and an hour later it is found to present a larger pupil. Or the eye is first subjected to one mydriatic, and the pupil carefully measured; then, after the complete recovery, the second mydriatic is applied, and the pupil again measured. Or, again, one eye, say the right, is subjected to cocaine, while the left is subjected to the other mydriatic, and the pupils compared. After both eyes have fully recovered, the left is subjected to cocaine and the right to the other mydriatic. Of course, when cocaine alone is used, the dilatation is to be measured by a weak light, and while the accommodation and convergence are relaxed. With the other mydriatics it makes no difference whether the light is weak or strong, or the visual axes convergent or parallel.

As examples of this power of cocaine, the diameter of the pupils in the following cases may be cited:

Mrs. J. G., aged fifty, under hyoscyamia, 3.5 mm.; cocaine, 5 mm.

Sallie McB., aged sixty, under atropia, 6.5 mm.; cocaine, 7.5 mm.

John F. H., aged forty-two, under duboisia, 4.5 mm.; cocaine, 6 mm.

Samuel E., aged twenty, under homatropia, 7 mm.; cocaine, 8.5 mm.

Edward J., aged thirty-one, under daturia, 8 mm.; cocaine, 8.5 mm.

The wider dilatation by cocaine was well marked in a case of locomotor ataxy, with Argyll-Robertson pupils, which, under cocaine, remained fixed to light, but contracted slightly with convergence. It has been most striking in elderly persons whose pupils would not dilate much for other mydriatics; but is often very considerable in young persons with quite dilatable pupils, as in Samuel E. mentioned above. The mydriatic power of cocaine is, in my experience, quite as constant as that of any other drug if the pupil be examined by a feeble light. And I cannot but think that its supposed inconstancy, spoken of by other observers, was mainly due to variations in degree of light and in the physiological reflex to it.

For diagnostic uses cocaine is altogether the best dilator of the pupil when dilatation of the pupil alone is sought; it is especially applicable to the eyes of elderly persons in whom such an action is most frequently needed; and its known power of lowering the tension of the normal eye, and the ease with which eserine overcomes its action, make it apparently least liable to cause serious outbreaks of glaucoma.

Under the head of the *influence of cocaine on the cornea*, I would call attention to certain phenomena, the more striking of which are presented by the cornea; and which should never be forgotten when cocaine is applied to the eye. Cocaine powerfully influences corneal nutrition, perhaps by its effect on nutrient vessels, perhaps in other ways, but certainly it does so. Many observers report that after the very free use of the drug the cornea sometimes becomes inelastic, flabby, and warped, making it difficult to bring properly together the edges of a corneal wound. Such a corneal change is incipient in a large proportion of the cases in which cocaine is used, and will reveal itself if properly looked for. I have never noticed it after the use of a two per cent. solution of cocaine, but I have not used such a solution nearly so much as the four per cent. I have detected it a few times after a single instillation of the four per cent. solution; and after repeated instillations it is quite common. The most delicate test of its presence is given in the irregular astigmatism it causes. This may be recognized subjectively by a blurring of test-type, or other small objects, and objectively by a delicate mottling of the pupil as seen in retinoscopy. When more pronounced the changes in the corneal tissue cause such irregularities in the corneal surface as are apparent by careful inspection of reflections therefrom.

This irregularity of surface is independent of any loss of epithelium. I have seen it come on while the eye was steadily under observation and the epithelium remained intact. I have produced it in my own eye by keeping the cornea exposed to the air after the instillation of two drops of the four per cent. solution. I have no doubt this simple irregularity of surface has given rise to some of the accounts of cases of sudden loss of the corneal epithelium. For in most of these, not all, it is not stated that the epithelium was seen to separate from the cornea, but that the cornea was suddenly found devoid of it, and when the relation goes on that the epithelium was found entirely regenerated in a few hours, or a day or two, without any considerable inflammatory reaction; I feel sure the case is one of this kind. For in my experience abrasion of the cornea under cocaine is followed rather by unusually severe inflammatory reaction—a fact to be borne in mind when removing a foreign body from the cornea by promiscuous scraping. The corneal change may proceed so far as to cause a notable haziness in that membrane. This is certainly favored by exposure to the atmosphere. And Würdinger,[1] experimenting on rabbits, caused very considerable corneal opacity by repeated instillations of a five per cent. solution; the production of the opacity being hastened by keeping the cornea exposed.

[1] Klin. Monatsblat. für Augenheilkunde, April, 1886.

It has been suggested, that it is by lessening the lymph supply of the cornea, and the outflow of aqueous humor when the anterior chamber is opened, as well as by anæsthesia, allowing unnoticed contact of foreign matters, that cocaine makes the eye more susceptible to various injurious influences.

That cocaine is not the only factor in the causation of such corneal opacity is suggested by a correlation of the experience of Bunge[1] and Wood-White.[2] The former, in Gräfe's clinic at Halle, had long used a corrosive sublimate wash to cleanse the conjunctiva prior to operations, without bad effects. Cocaine was introduced, and a series of cases presenting a peculiar parenchymatous opacity of the cornea ensued. Wood-White had used cocaine some months, without having any such trouble. He then substituted corrosive sublimate for boric acid as his disinfectant, and soon had five similar cases to record. He ceased using the mercuric chloride, and no more cases occurred.

Very often the use of cocaine in a normal eye is followed after three or four hours by a little feeling of irritation and smarting, and this condition attends upon a slight but very perceptible hyperæmia of the conjunctiva. When cocaine is used in an eye affected with acute conjunctivitis, the suffering is for the time relieved, but after an hour or so returns with increased severity. Noticeable inflammatory symptoms after the removal of a foreign body from the cornea, have, with me been a little more frequent, I think, since I have used cocaine. In at least four cases of corneal and conjunctival inflammation I have felt quite sure that matters were worse from the injudicious use of cocaine. This is one of them.

Mrs. R., æt. thirty-three, was seen in consultation for inflammation of the left eye. The lids were moderately swollen, the palpebral conjunctiva thickened and velvety, the ocular conjunctiva moderately hyperæmic. But there was a narrow, very dark, purplish pericorneal zone, and from the lower margin, over half the surface of the cornea, stretched a perfectly superficial ulcer. The bottom of the ulcer was faintly gray, not infiltrated, and bore here and there patches of gray, sloughy membranous tissue, which, at the margins of the ulcer, were continuous with the surface of the sound cornea beyond. Great pain was complained of, and evidenced in face and actions, comparable to that from corneal abrasion in nursing women, but proportioned to the greater extent of the ulcer. The tension of the globe was below normal. The patient, who was subject to asthma, had, three weeks before, a light attack of pleuro-pneumonia; and then some conjunctivitis, which, for a few days, had not been serious, and then, under treatment, had grown rapidly worse until I saw her. A 4 per cent. solution of cocaine had been prescribed, to be used every four hours. The application of it gave temporary relief, but, as the pain soon returned, she had the application repeated without the knowledge of the attending physician, sometimes as often as every hour. I stopped the cocaine, tapped the anterior chamber, bathed the eye with hot water, and put her on the use of atropia and hot stupes. The severe pain was at once relieved and did not return. Two days later the ulcer was free from sloughs and had a uniform gray base. From that time the eye steadily improved; but, after two months, though free from hyperæmia, presented a cornea nebulous, and slightly irregular over the whole area of the ulcer, and vision, with the best correcting lens, was but $\frac{15}{50}$.

In using cocaine in the eye, one should apply no more than is necessary; take especial care to guard the cornea from other injurious influences; and never place the drug in the hands of the patient for the relief of continuous, or frequently recurrent pain.

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[1] Klin. Monatsblat. fur Augenheilk., September, 1885.
[2] Ophthalmic Review, January, 1886.

MEDICAL PROGRESS.

HOW IS HEAT STROKE FATAL?—BONNAL, in a communication to the French Academy of Sciences, on July 4th, reached the following conclusions: His experiments were 130 in number, extending over six years; they were made upon men, in a hot liquid; in a dry oven; and in a moist oven; with the body naked and covered.

Life is possible at a higher temperature than that of the body. Tolerance of heat is greater in dry than moist air.

Loss of weight is proportionate to height and duration of temperature.

Lost weight is regained in twenty-four hours; if great, urinary secretion is suspended, to reappear when the loss is made up.

Physiological effects of heat are proportionate to height and duration of temperature; they are enhanced by moisture. The order in which they show themselves is variable, generally pulse and respiration are incoördinate; these deviations from physiological conditions precede more serious sequences.

Evaporation plays a very small part in the tolerance of heat; perspiration is generally most abundant in the most serious conditions. Death results from paralysis of the sympathetic nervous system, and failure of vital coördination.

Elevation of bodily temperature is an effect, not a cause, or a symptom.

Cold affusions are useful only by their effect on the nervous system.—*Gazette Hebdomadaire*, July 15, 1887.

KÉFIR, A NEW KOUMISS.—The following account of this beverage is taken from *Le Pratique Médicale*, No. 10:

It can be made from the milk of different animals, but it is generally made from cow's milk. Fermentation is excited by the presence of the kéfir, which is a species of mushroom, white when fresh, and yellow when old and dry, compact, elastic, and about one-fiftieth of an inch in diameter.

Chemically it is composed of water, fat, peptone, and nitrogenous material.

Examined microscopically it is composed of the rods and cells of beer-yeast.

It is found in the mountains of northern Caucasus near the snows. The natives believe that it is produced

by the bushes which grow upon the mountain-tops. It is probable that the first origin is in the great number of bacteria which circulate in the atmosphere, and whose soil of development is furnished by the curds of coagulated milk.

At the beginning of the preparation of kéfir the grains should be allowed to swell in tepid water for five or six hours—two teaspoonfuls to a tablespoonful of kéfir grains; they should then be washed in cold water and put in half a glass of fresh milk, which is changed every three hours. The grains, which were yellow, become white, and are then ready for the preparation of kéfir.

This is done by placing the white grains in a quart of fresh cow's milk, and the whole placed in uncorked bottles and exposed to a temperature of about 45° F., and frequently shaken. The milk begins to ferment soon, and in seven or eight hours the mass is fermented. The kéfir grains are removed by filtering through muslin, the liquid replaced in bottles, which are only partly filled, and carefully corked.

The milk is left at a constant temperature, and shaken every two or three hours. Fermentation continues in spite of the absence of the ferment, and in twenty-four hours the drink is ready. The grains of kéfir may be washed and used indefinitely.

Kéfir is richer in albumen than koumiss, less alcoholic, and less acid.

The following table of analysis shows the composition of milk, koumiss, and kéfir:

	Cow's milk.	Koumiss.	Kéfir.
Albumen	48	11.2	38
Butter	38	20.5	20
Sugar of milk . . .	41	22.0	20
Lactic acid . . .	...	11.5	9
Alcohol	...	16.5	8
Water and salts . .	873	918.3	905

APON, A COMPOUND TINCTURE OF THYMOL.—POULET has suggested the following, as a convenient way of administering thymol:

℞.—Tinct. capsici . . . 20 parts.
Ammonii liquid . . . 10 parts.
Essent. thymi,
Chloral hydrat. . . . āā 1 part.
Alcohol (60 per cent.) . . 100 parts.

To be kept tightly corked.

Sig.—10 to 20 drops in water; a half glass of water to be taken half an hour afterward.

This preparation may be mixed with oils and used as a liniment.

It is used as an analgesic.—*Deutsche medicinische Wochenschrift*, July 14, 1887.

TUBO-OVARIAN CYSTIC PREGNANCY; ABORTION; DEATH.—A case of unusual medico-legal and pathological interest is described in the current number of the *Archiv für Gynäkologie*, by DR. PALTAUF, of Vienna. A woman, aged twenty-eight, previously regular, missed a period at the end of June, 1886. Directly believing that the amenorrhœa was due to impregnation, she induced a midwife to procure abortion. On July 1st, several injections, of what fluid is not stated, were thrown up into the uterine cavity, by the aid of a gum-elastic catheter. These injections caused abdominal pain, and the first was followed by slight hemorrhage. During the next fortnight the patient suffered from constant pain and feverishness, and had for the greater part of that period to keep her bed. She was treated by her medical attendants for parametritis and pelvic peritonitis. A resistant body could be detected in the posterior vaginal fornix on digital exploration; it was not very tender. At length the patient became prostrated, diarrhœa set in, and she died on July 26th, after having admitted the cause of her illness. Dr. Paltauf was ordered, by the legal authorities, to make a necropsy. He found evidences of universal peritonitis, and the pelvic viscera were firmly matted together. The vagina was capacious, its rugæ effaced, and its mucous membrane of a grayish-violet color. The uterus was enlarged; behind it was an oval cyst over three inches in its long diameter. The relations of this cyst, which contained an embryo seven-tenths of an inch long, were most remarkable, and are fully described in Dr. Paltauf's paper. There was a tubo-ovarian cyst on both sides, and the large embryo-bearing cyst behind the uterus was part of the left tubo-ovarian cyst. A most unique feature was the free communication which was discovered to exist between the uterus, the tubes, and the cysts, so that there was a free passage from either side of the cavity which contained the fœtus into the uterus and *vice versâ*, without any opening into the peritoneum. The parenchyma of each ovary was uncovered, flattened out, on the surface of each cyst, but distinctly connected with the uterus by the ovarian ligament. Hence gestation had occurred in a case of probably congenital double tubo-ovarian cyst with ovaries malformed, yet perfectly able to carry on their functions. The necropsy and the evidence brought forward at the judicial inquiry proved that deceased had died of septic peritonitis, that she was in the second month of a tubo-ovarian cystic pregnancy; that the embryo was alive at or shortly before the death of the mother, and had no share in causing her death; that the infection was introduced from without into deceased's body; that the mechanical attempts to procure abortion were most probably the source of infection; that the nature of the peritonitis corresponded with the duration of the morbid processes; that the abnormal pregnancy could not have terminated in the ordinary manner, nor by the usual means whereby abortion is procured, and was not necessarily the cause of the mother's death; and that the action of the midwife might have terminated a normal pregnancy. The midwife was found guilty not of criminal abortion, but, according to Austrian law, of an offence against the safety of human life.—*British Medical Journal*, July 16, 1887.

CASEIN AS AN EMULSIFIER, is proposed by M. Léger in *L'Union Pharm.* of May 15th, on account of its permanence, and the ease with which it may be handled. To separate it, he treats 4 quarts of milk with 15 drachms of ammonia for twenty-four hours, and, after removing the saponaceous matter from the surface of the mixture, precipitates the serum with acetic acid. The magma of casein, strongly pressed, is treated with sodium bicarbonate, with a sufficient quantity of sugar to make the dried product contain one-tenth of its weight of casein. The powdered substance dissolves easily in water, and,

mixed with its weight of gum, may be used for almost all of the emulsions. Resinous matters and balsams, previously dissolved in alcohol, essences, and oils, may be mixed with it in the bottle itself, without using the mortar. The only defect in this saccharate of casein is its slight animal odor, which, it is believed, can be counteracted.—*American Journal of Pharmacy*, July, 1887.

LANIUM ALBUM (NETTLE) IN THE TREATMENT OF UTERINE HEMORRHAGE.—FLORAIN reports good results in metrorrhagia, where other drugs had failed, from the use of the following:

Tinct. lamii albi	10 parts.
Syrup simpl.	5 parts.
Aquæ	2½ parts.

A teaspoonful may be taken every half hour until hemorrhage is checked, and then every four hours. The drug is easily taken and well borne.

It contains tannic and gallic acids and nitrates, upon which its astringent properties depend.

An alkaloid, *sulphate of lamine*, has been isolated, which is sparingly soluble in water, but soluble in hydrochloric and nitric acids. Its exact analysis has not been made.—*Gazette de Gynécologie*, July, 1887.

MEMBRANOUS ENTERITIS; INTESTINAL PERFORATION; PERITONITIS; DEATH.—At a recent meeting of the Society for Internal Medicine at Berlin, Rothmann reported the case of a patient who had repeated discharges of blood and fibrinous masses with symptoms pointing to a localized ulceration; perforation, peritonitis, and death followed. Post-mortem revealed a knuckle of intestine adherent near the junction of the stomach and duodenum. The adhesions had ruptured, and the finger found an annular constriction in the intestine.—*Deutsche medicinische Wochenschrift*, July 7, 1887.

CASTRATION FOR TUBERCULOSIS OF THE TESTICLE.—FINCKH publishes some statistics on a basis of twenty-nine cases of castration performed for tuberculosis of the testicle in the surgical clinic at Tübingen. In some cases the time of observation after the operation extended to thirty years, and at the least to one year.

He warns against the partial extirpation ot the testicle, which has been recommended by some, to preserve for the patient the "illusion" of virility, rightly claiming that it is impossible to be certain that the rest of the testicle is really healthy, and with respect to the psychic effect of castration, he quotes the case reported by Simmonds, in which double castration for tuberculosis relieved the patient of decided hysterical symptoms.

The epididymis is the most frequent starting-point for the tubercular process, much less frequently the body of the testicle, and only now and then the seminal vesicles, or the prostate. The infection very rarely descends from the kidney to the genital organs. The tuberculosis frequently spreads from the epididymis to the body of the testicle, and sometimes to the tunica and the scrotal tissues. The tunica is often the seat of miliary tubercles. The infection may extend along the vas deferens to the prostate and seminal vesicles, and it may reach the testicle of the other side, by descending its vas deferens. But out of eight cases in which double castration was performed, Finckh found the vas deferens healthy on both sides at the time of operation in five, and in two it was diseased on only one side. In the remaining cases both cords were tuberculous, and on one side the changes extended within the pelvis, so that some diseased tissue was left after extirpation, and yet the patient lived twenty-three years after. In like manner, Simmonds found the prostate healthy in three cases out of five of tuberculosis of the epididymis of both testicles, consequently the disease must have had an independent origin upon both sides, or the infection was able to pass through the prostate without affecting it. The existence of disease in both testicles, then, does not prove that the intrapelvic parts are involved, and even if they are, recovery is possible, although the whole disease tissue cannot be removed—therefore the opinion held by some, that castration is contraindicated when the tuberculosis exists upon both sides, is erroneous.

It has generally been supposed that if the intrapelvic parts of the genital organs were tuberculous, the prognosis was hopeless, and yet in seven cases in which some diseased tissues had to be left in the cord, none had recurrence—the elapsed time of observation after operation being 24, 6, 5, 3, 2, and 1 (2 cases) years. Finckh does not seem to be familiar with the fact that in the two cases of spontaneous recovery from tuberculosis of the testicle, proven by autopsy, quoted by Reclus, the prostate was involved when the process was at its height. Unfortunately Finckh does not give any facts as to the prognosis when castration is not performed.

The youngest of Finckh's cases was 8 years old, the next 18, the oldest 63. Of the 29 cases 6 died subsequently of tuberculosis of various organs, but no local recurrence was noted. One of these cases died of miliary tuberculosis three weeks after the operation. The longest duration of life of these six cases was four years, and adopting this period as the extreme limit during which recurrence is to be expected, there are 13 cases which can be set against them, in which no recurrence took place within that time.

The duration of the disease at the time of operation is not considered, but from the accompanying histories of the cases we learn that in the six cases which died of tuberculosis, the duration of the disease before operation was 1 month, 6 months, 18 months, 2 years (2 cases), and of one case not given. Of the other cases there are seven in which the duration was over one year (in two cases, three years), all remaining free from tuberculosis five years after the operation. Therefore long duration does not necessarily contraindicate castration. Only one case died from the operation, an old man, of "exhaustion."—*Annals of Surgery*, July, 1887.

FORMULÆ FOR AMYLEN-HYDRATE, A NEW HYPNOTIC.—VON MERING advises the following:

℞.—Amylen-hydrat.	ʒ5.
Aq. dest.	ʒ15.
Extr. liquir.	ʒ2½.

Half of this may be taken on retiring.

Also,

℞.—Amylen-hydrat. . . . . ♏75.
Aq. dest. . . . . ʒ12½.
Mucilag. gum arab. . . . ʒ5.

To be used per rectum. The drug may be combined with morphia as follows:

℞.—Amylen-hydrat. . . . . ♏90
Morph. hydrochlor. . . . gr. $\frac{3}{10}$.
Aq. dest. . . . . ʒ15.
Extr. liquirit. . . . . ʒ2½.

Half of this may be taken on retiring.

Also,

℞.—Amylen-hydrat. . . . . ʒ1.
Morph. hydrochlor. . . . gr. 1.
Aq. dest. . . . . ʒ12½.
Mucilag. gummi arab. . . . ʒ5.

Which may be given per rectum.—*Therapeutische Monatshefte*, July, 1887.

THE MOTOR POWER OF THE STOMACH AND THE INFLUENCE OF THE ELECTRIC CURRENT.—PROFESSOR EWALD has enriched our diagnostic resources by a new procedure for investigating the motor power of the stomach (Berlin Medical Association, June 15th). We know pretty well the chemical changes taking place during digestion, but our experiments on the time required by the stomach for transmitting food into the duodenum have hitherto been limited to patients suffering from gastric fistula. Trials made in the normal state of health have always failed. A means has now been found in salol excellently adapted to solve this question. Nencki, who discovered salol, has stated that it remains undissolved in the stomach, but is decomposed into phenol and salicylic acid by the pancreatic juice. The first part of this dictum is correct, the latter incorrect; for salol is decomposed by any neutral mucous membrane, whilst the juice of the pancreas seems rather to delay the decomposition. Salol, on reaching the bowels, immediately dissolves, and shows almost instantly in the urine as salicyluric acid. This easily yields a red precipitate with chloride of iron. This reaction will show almost exactly the moment of the entrance of food into the bowel. The urine of seven persons in sound health showed the reaction to take place mostly within three-quarters of an hour, rarely within half an hour. It took two to three hours in seven cases of "ektasia ventriculi," this disease being distinguished by loss of motor power in this organ. On applying the electric current to the abdomen, the reaction took place in normal cases a quarter of an hour sooner; in cases of enlargement of the stomach, half an hour sooner. This experiment says much in favor of this method of treatment, which is despised by so many physicians. Science owes to Professor Ewald a discovery equally important in theory and in practice.—*British Medical Journal*, July 2, 1887.

A ROUTINE FOR OBSTETRIC PRACTICE.—DR. DUNCAN, of the Middlesex Hospital, advises the following for all obstetric cases:

Assuming, then, that the sanitary arrangements, both of the lying-in chamber and of the house in which it is situated, are perfectly sound, I venture to suggest that every obstetric case should be conducted somewhat as follows: The medical attendant, before visiting his patient, ought to feel confident that he does not carry in his clothes the means of infection. Before making a vaginal examination the hands should be thoroughly washed with carbolic soap and water, using always a nailbrush, and then the forefinger smeared with some antiseptic. (I always use a 1 in 500 solution of corrosive sublimate in glycerine.) The vagina is to be washed out before the birth of the child with a warm solution of either 1 in 40 carbolic acid, or 1 in 2000 sublimate. For the five days following delivery the vagina is to be washed out night and morning with a 1 in 2000 sublimate solution, and from then until the lochia have ceased with a solution of half the strength. Any perineal laceration should be sutured, and in any case where it has been necessary either to apply the long forceps or to insert the hand into the uterine cavity, this latter should be washed out by means of a double pipe, and then a thirty-grain iodoform bougie passed well into the uterus. The nurse should take precisely the same precautions as the practitioner with regard to her hands before attending to her patient. She should be careful to remove all soiled linen from the room, and to keep the catheter and the vaginal pipe immersed in a basinful of 1 in 40 carbolic or 1 in 2000 sublimate solution. If every woman's lying-in were to be conducted on the lines above indicated, it seems to me we should very rarely meet with that fearful malady, puerperal fever.—*Lancet* July 16, 1887.

COCAINE IN MENTAL DISEASES.—HEIMANN, of Charlottenburg, Berlin, writes as follows of his experience with cocaine in mental disorders in the *Journal of Mental Science* for July, 1887:

Certain therapeutic effects upon the human organism ascribed to cocaine, occasioned me to make use of the drug in suitable cases of psychosis and psycho-neurosis. Stimulant action and exhilaration (Euphoria) on the one hand, and on the other depression of undue sensitiveness, these were the effects I looked for from the alkaloid. Unfortunately, I am able to record scarcely a single case of certain and permanent cure following the use of the drug.

In melancholia, without hallucinations, cocaine was ordered in doses of 0.01 gramme thrice daily; the dose was increased up to 0.06 gramme (in English weights grain $\frac{1}{7}$ to grain $\frac{1}{9}$). At the end of a fortnight the treatment was obliged to be abandoned on account of failure to health, due to anorexia; the drug had been quite without effect on the psychosis. No secondary effects were witnessed with the exception of acceleration of pulse and dilatation of pupil, both of which lasted some three or four minutes. The small doses were chosen in order to avoid the production of hallucinations.

In melancholia with hallucinations cocaine was given in doses of 0.02 gramme (⅓ of a grain) about thrice daily, again without success. One of these latter patients suffering from hypochondriacal delusions, stated that for a very short time after taking the drug (one to two minutes) he felt easier. After fourteen days, when no advance had been made, but on the contrary, complete anorexia had supervened, the drug was stopped.

To test the vaunted influence of cocaine on the motor centres, the drug was administered subcutaneously in doses of 0.02 gramme (⅓ of a grain) per diem. to two patients suffering from katatonia; the drug was continued for several weeks without the slightest effect.

Finally, even in cases of hypochondriasis, neurasthenia, and hysteria in which I looked for great success, having regard to the exhilarant effects described, even here there was complete absence of any obvious or permanent improvement. The hypochondriacal patient, who hails with gladness every new remedy, was soon obliged to complain, and with justice, of anorexia. The subject of neurasthenia complained more and more of weakness, being unable to take sufficient nutriment. In hysterical patients besides anorexia, which, by-the-bye, is not to be disregarded, owing to the frequent coexistence of anæmia, there occurred attacks of vertigo, which soon lessened their faith in the medicine. From these, my observations, I am constrained to deny to cocaine a place in the therapy of mental disease.

OUTLINING THE STOMACH BY PERCUSSION.—The following method, for which novelty and utility are claimed, is advocated by RUAULT in the *Gazette Hebdomadaire* of July 1, 1887:

The patient is to be placed on his back, the arms raised, the hands behind his head. The physician, facing the foot of the bed at the patient's left side, places his ear upon the left false ribs. With his left hand he percusses from the left border of the sternum in a straight line toward the abdomen. He so continues, from left to right, until he has outlined and marked on the skin, if desired, the peculiar resonance of the stomach. In doubtful cases fluid or gas may be introduced into the stomach with advantage.

DIABETES AND GLYCERINE.—W. B. RANSOM, of Trinity College, Cambridge, reports the following conclusions from experiments bearing upon this subject in the *Journal of Physiology*, vol. 8, No. 2.

These experiments tend to show:

1. That certain forms of glycosuria may be checked by glycerine.

2. That glycerine acts more efficiently when introduced into the alimentary canal than when injected subcutaneously.

3. That glycerine checks glycosuria by inhibiting the formation of sugar in the liver.

3. That in this way glycerine may lead indirectly to an accumulation of glycogen in the liver.

Viewing the formation both of glycogen and sugar as a process of cell metabolism, quite independent of ferment action, he is unable to suppose that glycerine produces its effect by acting on a ferment in the blood, but considers it probable that it excercises some direct influence on the protoplasm of the liver cells.

Of a possible therapeutic use of glycerine in diabetes mellitus he is not now in a position to speak. The reports of clinical observers are very various, and his own observations are as yet too few to form a basis for definite conclusions.

SUPRAPUBIC CYSTOTOMY FOR A FOREIGN BODY AND CALCULUS.—DR. GILLON, of Wellington Hospital, New Zealand, reports in the *British Medical Journal* of July 30, 1887, the case of a man, who in 1884, in endeavoring to dislodge a calculus with a pen-holder pushed the latter into the bladder. The operator found a calculus encrusted upon the holder, both weighing 2¾ ounces. The patient made an uninterrupted recovery.

THE TREATMENT OF LARYNGEAL PHTHISIS IN THE STAGE OF ULCERATION.—ASTIER gathers the following methods of treatment:

1. For pain,

Ext. opii,	
Ext. belladonn.	āā gr. 8.
Dissolve in aqua lauro-cerasi. . .	ʒ 5.

Used locally.

Insufflations of $\frac{1}{10}$ of a grain of morphia mixed with starch, as advised by Mackenzie, may be used twice daily; and the dose may be increased to ½ a grain.

Moure employs 5 grains of hydrochlorate of morphine in 15½ ounces of water by spray.

Astier employs the following powder by insufflation:

Plumbi acetat.	gr. 30.
Morph. hydrochlorat.	gr. 3.
Sacchar. lact.	ʒ 2½.

To be applied after cleansing the mucous membrane by solutions of potassium chlorate or sodium bicarbonate.

2. The ulcerated surfaces may be cauterized by nitrate of silver, galvano-cautery, tincture of iodine, or

Iodin.	gr. 5,
Potass. iod.	gr. 45.
Glycerin.	ʒ 2½.

Iodoform, in suspension in glycerine, or in powder may be used.

3. If œdema be present, tracheotomy may be necessary.

4. Forced feeding, and preliminary anæsthesia by cocaine, before introducing a stomach-tube, may be needed.

The lactic acid treatment (Krause) consists of the use of solutions of from 10 to 80 per cent. of the acid; from which good results have been obtained.—*Journal de Médecine*, July 24, 1887.

WHAT IS THE SEMILUNAR SPACE OF TRAUBE?—It will be remembered that TRAUBE was the first to draw attention to this region of the body in his studies of the physical signs of pleurisy; the space which bears his name is of interest to diagnosticians in examining the stomach; it is given thus by *Le Progrès Médicale* for July 23, 1887: "It is that portion of the left inferior anterior thoracic region corresponding to the tympanitic resonance of the stomach." Its determination is effected by following the usual rules for percussion.

TUBERCULOSIS IN CATTLE.—MÜLLER concludes, from an extensive series of experiments, as follows: Forms of tuberculosis similar to those in the human subject are readily produced in cattle, as diffuse osteomyelitis, miliary tuberculosis of bones, which in the greater number of cases develop freely in six weeks after infection with well-marked symptoms.—*Centralblatt für die medicinischen Wissenschaften*, July 16, 1887.

THE MEDICAL NEWS.

A WEEKLY JOURNAL

OF MEDICAL SCIENCE.

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SATURDAY, AUGUST 27, 1887.

THE MEDICO-LEGAL SIGNIFICANCE OF TWO OR MORE MORTAL WOUNDS.

INTERESTING and instructive papers have lately appeared in THE MEDICAL NEWS, by SURGEON ALFRED A. WOODHULL and PROF. D. HAYES AGNEW, upon this subject. Since then the lamented death of Lieutenant Arthur H. Clarke, U. S. N., who is believed to have destroyed himself by a pistol-shot on board the "Iriquois," a few months ago, brings again before us the oft-mooted question, whether it is possible for a person to inflict upon himself, consecutively, two mortal wounds, say by shooting, one bullet through the brain and another immediately afterward through the heart?

The medico-legal interests connected with this question will be immediately apparent when we consider the issue involved. If, for example, we deny the possibility of a suicide, after having inflicted upon himself a wound which we judge must have been immediately fatal—such as that caused by a pistol-ball or a dagger through the heart, or by a bullet tearing through the brain—repeating the latter act by a *second* equally fatal wound, then in a case where a dead body is discovered displaying two such mortal wounds, our only inference could be that it was a case of homicide and not a suicide. On the other hand, if we admit the possibility of a person fully determined on self-destruction, having failed in his first effort to destroy himself *instantly*, to repeat the deadly act, so as not to be foiled in his attempt, then the case assumes a very different aspect. An innocent person, arrested, possibly under suspicious circumstances, might be tried for murder, and even convicted under the former view of the case, whilst under the latter view the suspected person might be very justly acquitted of all complicity in the case, and the death be chargeable solely to the unhappy suicide himself.

The importance to the medical jurist of clear views on this subject cannot be over-estimated. The case referred to by Surgeon Woodhull was that of a man found in bed, unconscious, with a pistol-ball that had gone crashing through his brain, and contusing the opposite parietal bone. He still held the fatal weapon tightly grasped in his hand. Two chambers of the revolver had been discharged. The second ball had passed up through the ceiling, obliquely, some little distance from the side of the body. In this case there could be no doubt whatever that the act was suicidal. There was no second wound on the body. The only point of interest in connection with our present subject is the fact of the *second* discharge of the weapon. Was it intentional on the part of the suicide, or was it a mere automatic act? Was the man capable, after having shot himself through the brain (the wound being not immediately fatal), of again voluntarily firing his pistol? Or did he, as Surgeon Woodhull inclines to believe, unconsciously, with his finger yet on the trigger of a self-cocking pistol, exert an automatic pressure on that trigger, as his arm would necessarily relax and partially fall, so as to discharge the weapon, as before mentioned? There seems to be sufficient grounds for adopting the latter view in this particular instance, inasmuch as even assuming the man's ability consciously to fire a second shot, it would certainly have taken a different course, namely, through his own body. The only other possible alternative to adopt is the idea that the shot through the ceiling might have been the first one fired—"a trial shot, to determine whether the weapon was in good working order."

We think that the above case certainly warrants the presumption that, under similar circumstances, where a self-cocking pistol has been *twice* fired, the second shot may very possibly have resulted from an automatic, unconscious act—on the part of the suicide. Nor need this theory be necessarily negatived, even if the second (supposed) shot has entered a vital part of the body, instead of striking some outside object, since it is quite conceivable that such a chance-shot might equally be directed toward the man's body, depending entirely on the particular position assumed by the relaxing arm.

The medico-legal point in such a case is just that suggested by Dr. Woodhull. "Another person might have been fatally wounded by this second shot. In that event, the discovery of two bodies might have led to the suspicion of murder followed by suicide; while, in fact, there would have been suicide followed by involuntary manslaughter."

Prof. Agnew's interesting article opens with the

question whether "it is possible for an individual, with suicidal intent, and in quick succession, to inflict a perforating shot wound in the head and another in the heart." In a case in which he was called as an expert, he held that it was, and we think his view is capable of abundant proof. But, first it is necessary to disabuse ourselves of the notion that wounds of the brain and heart are always immediately fatal. Indeed, as regards the former, we have abundant evidence that they are by no means always mortal; numerous cases are recorded of recovery after the most frightful wounds of the head, involving even a loss of a considerable portion of the brain. After a severe wound of this organ, the only conditions disqualifying the individual from voluntarily repeating the attempt upon his life would be either immediate loss of consciousness, or immediate paralysis of the voluntary muscles. The records of surgery show that neither loss of consciousness nor paralysis necessarily follows gunshot wounds of the brain; the occurrence of the paralysis being altogether dependent upon the particular areas or portions of the cerebral mass involved, so that this factor must be eliminated in the discussion of this question. Given then, the *ability* of the individual thus circumstanced, together with an unimpaired *will*, we can see no impediment to his repeating the attempt at self-destruction.

Secondly, as regards wounds of the heart, the records fully demonstrate the fact that such injuries are by no means immediately fatal; indeed, in not a few instances recoveries have taken place. The periods of survival in fatal cases have varied from a few hours up to several months. Hence there is no difficulty in admitting the possibility of a determined suicide making a second, or even a third attempt upon his life, in case the first one—even though it be a mortal wound of the head or heart—was not immediately fatal.

To place this matter beyond all question, the testimony of Prof. MacLeod, of the University of Glasgow, quoted by Prof. Agnew, and the records of the office of the Coroner of this city also show a number of similar instances of multiple wounds suicidally inflicted. One is that of a policeman who first shot himself through the head, and immediately afterward through the heart. This was done in the presence of witnesses. Another case is that of a lad aged nineteen years, who inflicted four shot wounds from a revolver on his own person. The first bullet entered the forehead, and after taking a circuitous route, lodged about the middle of the left temporal lobe. A second ball was fired into the chest, passing through the left ventricle of the heart. A third shot passed through the abdomen; and the fourth into the neck. Death ensued from pericardial hemorrhage. A third case is that of a grocer who was found dead in his room, having locked the door. A pistol was still clutched in each hand; one bullet had passed through the brain, and a second through his heart.

From the foregoing statements we think the following propositions are sustained:

First. The presence of two or more wounds in a dead body is not inconsistent with the idea of suicide. There is abundant proof to show that a person determined on self-destruction, may first shoot himself in the head, and immediately follow it up by a shot through the heart, or *vice versâ*.

Secondly. In the case of two bullet-wounds in a suicide, made by a self-cocking pistol, it is quite possible that the second wound may have been inflicted unconsciously and automatically in the descent of the arm after firing the first shot. This, however, could only occur where a self-cocking pistol had been the weapon used; we do not believe it to be possible with an ordinary pistol.

Thirdly. In an unknown case, and in the absence of all evidence, the presence of several wounds upon a dead body would generally be suggestive of murder; although, as we have seen, it might not be positive proof of it. The nature of the wounds, their position and direction, are the important circumstances which would here have to be considered.

AMYL HYDRATE—A NEW HYPNOTIC.

IN the *Therapeutische Monatshefte* for July, 1887, PROFESSOR MERING, of Strassburg, calls attention to a substance known as amyl hydrate, which possesses hypnotic powers, and belongs to the group of tertiary alcohols. When a small dose was given to a frog, it produced a failure of reflex action, and finally sleep. In the higher animals, such as the dog or rabbit, deep sleep was the first symptom to assert itself, the loss of reflex action following it. The advantages which Mering claims for amyl hydrate is that it has but little effect on the circulation as compared to chloral, its chief influence being upon the respiratory system, so that in those animals to whom a lethal dose was administered death came by failure of respiration. In large doses, however, it very greatly depresses the heart, and it can scarcely be said to be a drug which can be used fearlessly.

The clinical side of Professor Mering's paper records the use of amyl hydrate in a very large number of cases in which we are generally accustomed to use chloral. He has found it useful in delirium tremens, and all morbid conditions of nervous matter, and has also used it with good results in the insomnia of phthisis. Generally he administers it in the form of a clyster, in a mixture consisting of seven parts of amyl hydrate, fifty parts of water, and twenty parts of mucilage of acacia. When pain is associated

with the insomnia, he adds a small dose of the muriate of morphia.

GASEOUS ENEMATA IN THE TREATMENT OF PHTHISIS IN GERMANY.

GERMAN physicians have shown their customary reserve in the adoption of expedients whose utility is not based upon the soundest of pathological grounds in adopting the recently examined treatment of phthisis by enemata of gases. At a recent meeting of the Society for Internal Medicine, of Berlin, STATZ reported the results which he had obtained in treating ten patients in Fräntzel's clinic, eight of whom were advanced in the disease. The treatment was thoroughly tried for periods varying from nine days to sixteen weeks. In six cases the physical signs were improved. In all general palliation ensued, but in none were the bacilli influenced. The improvements in appetite and weight were lost as soon as treatment was suspended. The value of the treatment seemed to be entirely palliative and transient. Further trial was urged by Statz, but in the ensuing discussion EWALD stated that he could not see grounds for placing reliance upon the method.

THE PROGNOSIS IN THE CASE OF THE CROWN PRINCE.

THE résumé of VIRCHOW'S paper on Pachydermia Laryngis, which we print to-day, and the published reports of his examination of the fragments of the growth removed by Dr. Mackenzie from the larynx of the Crown Prince of Prussia, leave no doubt as to the opinion of this great pathologist as to the benign character of the morbid growth. No epithelial elements were found in those portions of submucous connective tissue which were removed in the second operation. Their presence, according to the tenor of his paper, would have declared the affection to be cancerous, no matter what the character of the surface tissue. Deep connective tissue was not furnished in the specimen last examined, and proliferation of epithelial masses was found in the superficial portion only, but in no position did this proliferation attain the character of independent formation. He states that this excised piece, in still greater degree than that previously removed, presented the appearance of a hard compressed wart, the base of which did not contain the remotest evidence of a neoplastic penetration into the tissue.

Virchow, in plain language, has not discovered any appearances indicative of malignancy in the specimens examined, and from his knowledge of pathology he does not hesitate to pronounce the morbid growth in the Crown Prince's larynx to be a simple wart without any cancerous tendency. The fact of recurrence does not militate against this view, and he expresses the opinion that every recurrence of the growth can be successfully removed as it presents, until, as in the history of similar cases, final eradication is accomplished.

WITH profound regret we record the death of NATHANIEL ARCHER RANDOLPH, M.D., which occurred on Sunday last, while bathing in the surf at Longport, N. J., whither he had gone to secure a day's needed rest.

Dr. Randolph was born in the neighborhood of Philadelphia about thirty years ago. He received a liberal education at Cornell University and graduated in medicine at the University of Pennsylvania in 1882. He subsequently pursued in Germany his studies in physiology, therapeutics, and the relation of foods to nutrition in which subjects he was specially interested. Last year his qualifications as a lecturer received early recognition by his election to succeed the late Dr. J. G. Richardson, as Professor of Hygiene in the University of Pennsylvania.

Dr. Randolph possessed cultivated tastes, a benevolent disposition, and a high sense of professional responsibiliy; he was a capable teacher, an accomplished student, and an able writer. His last published research was a thoughtful, physiological study on the irradiation of motor impulses, which was read before the College of Physicians in March last. He was an active worker on the staff of THE NEWS until last May, when, with Dr. Dulles he assumed the management of *The Medical and Surgical Reporter*, and in this new field he labored with characteristic zeal. He has been cut off at the outset of a career which was full of promise of honor to himself and usefulness to his fellows, and a wide circle of sorrowing friends mourns his loss.

DR. PEDRO FRANCISCO DA COSTA ALVARENGA, of Lisbon, who died several years ago, childless and possessed of a large fortune, has willed the greater portion of his wealth to scientific and charitable institutions. Among his bequests he has left about $18,000 to the College of Physicians of Philadelphia, of which he was an Associate Fellow, and the same amount to the Medical Society of Berlin, at whose meetings he is said to have been a frequent visitor.

THE AMERICAN GYNECOLOGICAL SOCIETY will hold its annual session in the Hall of the New York Academy of Medicine on September 13th, 14th and 15th. Several distinguished British and Continental obstetricans and gynecologists have accepted invitations to participate in the proceedings.

THE AMERICAN ACADEMY OF MEDICINE will hold its eleventh annual meeting at Columbian College,

Washington, D. C., Saturday, September 3d, at noon. The annual collation will take place at the Arlington Hotel at 9 o'clock of the same evening.

THE eighteenth annual session of the Medical Society of Virginia will convene in Richmond, Va., on Tuesday, October 18, 1887, at 8 P.M. A general discussion on "The Choice of Anæsthetics" will be opened by Dr. Hunter McGuire.

DR. CHARLES G. STOCKTON has been elected to fill the vacancy caused by the death of Dr. Rochester in the medical faculty of the Uuiversity of Buffalo. A Department of Veterinary Medicine is to be added to the University.

SPECIAL ARTICLE.

PACHYDERMIA LARYNGIS.

PROF. VIRCHOW, under this title, read before the Berlin Medical Society, at its meeting on July 27, 1887, a paper which gives his views of the pathology of the throat affection of the Crown Prince of Germany.

In opening his paper Professor Virchow remarked that it would ill become him to omit mention of the fact that his discourse was occasioned by the serious illness of the Crown Prince, which had so largely engaged public attention during the past few months. After alluding to his early studies of the anatomy of laryngeal growths, he described the boundaries of the pavement epithelium of the pharynx, as it extended upon the laryngeal structures; referring especially to the broad strip of pavement epithelium which passed over the region between the two arytenoid cartilages, and is thence continuous without interruption upon the vocal cords to their anterior extremities. He remarked that these sections of the larynx covered with pavement epithelium, when compared with portions of the digestive tract, showed a type approaching the cutaneous cells; that their characteristics were more or less cutaneous or dermoid. This was especially shown in the continuity of the flat epithelium of the skin, as it extended through the mouth into the respiratory and digestive tract.

The processes which form the objects of interest in this epithelial tissue partake largely of the character of chronic inflammation, in the course of which two morbid processes are especially noticeable, viz., *a.* localized swelling, generally limited to a single point; *b.* diffuse swelling. Both are excessive epithelial proliferation; in the first the cells do not change their type, but greatly increase as dermoid cells; in the second a diffuse proliferation of the superficial connective tissue, rather than of the epithelium, takes place. Both processes Virchow names pachydermia; the limited or localized form he terms "warty" pachydermia, or pachydermia verrucosa.

As a characteristic appearance on examination he finds at the posterior extremity of the vocal cord, where the processus vocalis of the arytenoid cartilage passes beneath the mucous membrane, at its emergence, a flat, oval swelling, which extends generally obliquely from behind and above downward and forward beneath the border of the vocal cord. These bodies are symmetrical, and are not the scars of former ulcers, but epithelial layers closely adherent to the subjacent cartilage, and probably undergoing an erosive-like process. In addition to this there is a diffuse process which extends over the entire surface of the vocal cords, and consists of a superficial layer of grayish, thick material, which is made up of epithelial cells. Microscopic examination reveals a papillary structure covered with epithelia. A further extension of the disease is found in the interarytenoid spaces; this occurs, however, infrequently. In this condition an important feature is the occurrence of masses of hardened fissured tissue called rhagades, resembling the hardened portions of cutaneous callus. By the movements of the parts these masses wound the surrounding tissues, producing the appearances of cancroid ulcers. He does not believe that an actual change into cancroidal tissue occurs.

The most salient point of warty growths upon ordinary examination, is found at the middle and anterior portion of the vocal cords, and in the anterior angle where the vocal cords meet.

The best described form of pachydermia is that in which the papillary element is least well marked, the growth consisting of epithelia only. Such growths are generally called papilloma, a name which Virchow considers an absurdity; he shows how it is equally applicable to various tumors, and wishes that it was rejected from the literature as meaningless.

The essential characteristic of papillary proliferation in the larynx he considers to be the proliferation and hardening of the epithelial elements. Epithelioma is a much more appropriate name for the growth, which should be subdivided into hyperplastic and heteroplastic.

The diagnosis is difficult, and it can only be determined by anatomical examination whether the growth is heteroplastic or cancerous, or only superficial epithelial proliferation. The latter consists of a growth of the epidermal epithelium, amidst which the papilla grows. Such symmetrical growths are often found in connection with nests of epithelial cells. According to Virchow, the verrucosities of the larynx are of epithelial nature, and were formerly called condylomata, but this name is now reserved for another form of tumor. Another gross error in the classification of these growths has been in calling them fibromata; when sections are properly made it will be found that in no instance does the connective tissue proliferate into the epithelium, but the growth is an epithelial proliferation. It is not difficult, by proper section, to study carefully the development of these tissues from nuclei, and from such observations the conclusion is reached that the disease pertains to the epithelium as such. Polyps may possess some of the characteristics of these growths, but not their combined peculiarities.

Virchow sums up his description as follows: In a certain portion of the larynx, caused by irritation

similar to that which exists on the external skin, two kinds of proliferation may occur which resemble chronic inflammation; one produces a warty growth, and one a diffuse, even swelling, which attacks the entire superficies. These resemble markedly the warts and diffuse swellings produced by irritation of various sorts upon the integument, causing a local increase of tissue. (In illustration of the differential diagnosis of these growths, specimens of lupus and papillary cancer were exhibited.)

Virchow's criterion of distinction between the papillary wart and the papillary cancer is the absence or presence of epithelial elements in the connective tissue. He considers all growths benign in which the normal demarcation remains at the base of the epithelial layer. Every trace of epithelium in the connective tissue he considers suspicious. When he finds beneath the boundary line of epithelium spaces filled with epithelial masses, then he recognizes the distinctive characteristic which stamps the formation as cancerous.

To determine the character of these growths, a thorough examination of the base of the tumor must, therefore, be made; when nothing foreign exists there, no matter what has developed on the surface, the growth is local and of a benign nature, nor will malignancy subsequently develop; but when beneath the boundary line spaces filled with epithelial cells are found, the growth is cancerous. It is evident that only comprehensive and properly made sections are available for diagnosis.

Recurrences of this papillary form of growth are frequent, and have been often observed. Repeated removals have succeeded in extirpating such masses. It is possible that such growths may spontaneously disappear, as do cutaneous warts. He has had no personal observations on this point, but others have observed such disappearance.

The full text of the paper will be found in the *Berliner klinische Wochenschrift* of August 8th.

REVIEWS.

WEAR AND TEAR, OR HINTS FOR THE OVERWORKED. By S. WEIR MITCHELL, M.D., LL.D. Harv., Member of the National Academy of Sciences, President of the College of Physicians of Philadelphia, etc. Fifth edition, thoroughly revised. Philadelphia: J. B. Lippincott Company, 1887.

IN the sixteen years which have elapsed since the first edition of this book was issued, the accumulation of property has removed a large number of Americans from the number of those to whom the author originally wrote. There will always remain, however, a large class engaged in mental labor with whom the struggle for existence often exceeds the limits of endurance. The problem of the conservation and direction of energy occupies not only the field of physics, but also that of neurology; and to those whose capital is nervous force, the book has proved a safe guide in avoiding the dangers of excessive labor. The book suggests several problems in American sociology, to whose solution his readers would gladly invite the erudition and facility of the author.

CORRESPONDENCE.

THE INTERNATIONAL MEDICAL CONGRESS.

IN spite of the depressing influences of the heated term, busy preparations are going on by all concerned in the local management of the International Medical Congress. The office of the Secretary-General, Dr. Hamilton, shows tables filled with proof-sheets, titles and abstracts of papers, programmes, letters, etc., and medical men are constantly coming and going, seeking information on matters pertaining to the Congress. Dr. Hamilton showed me a closely printed pamphlet in small type, a proof copy, in which were embodied the titles of papers to be read and presented; it (the pamphlet) had already reached sixty-four pages, and the eleventh section, that of Ophthalmology, was not concluded, there being six more sections to be included, so that it would be impossible to give a fair idea of the material preparing without taking up a great deal of space.

So far, 338 foreign delegates are on the list as having expressed their intention of being in attendance.

The general sessions will be held at Albaugh's Opera House, which is centrally located on Fifteenth Street, just below Pennsylvania Avenue, and looks out on the grounds of the President's House and Washington Monument. It ought to be cool and well ventilated. Its seating capacity is about thirteen hundred, including the balcony seats; the floor, comprising what is known as the orchestra and orchestra circle, seats seven hundred and eighty. The stage is moderately large, and the acoustics are pretty good. The Sections have also been provided with suitable accommodations.

The programme for the meetings is about as follows:

Monday, September 5. General meeting at Albaugh's Opera House, beginning at 11 A.M. Forenoon: Organization of the Congress, report of Secretary-General, report of Chairman of Local Committee, Address of Welcome by Secretary of State Bayard, Address by the President of the Congress, and other addresses. The Sections will meet at 3 P.M.

Tuesday, September 6, 10 A.M. General addresses: First, Dr. Austin Flint, of New York, on "Fever: Its Causes, Mechanism, and Rational Treatment." Second, Dr. Mariano Semmola, of Naples, Italy, on "Bacteriology and Its Therapeutical Relations. The Sections will meet daily from 11 A.M. to 1 P.M., and from 3 P.M. to 6 P.M.

Wednesday, September 7, 10 A.M. General addresses: First, Dr. P. G. Unna, of Hamburg, Germany, on "The Relations of Dermatology to General Medicine." Second, Dr. G. Fielding Blanford, of London, on "The Treatment of Recent Cases of Insanity in Asylums and in Private Houses."

Thursday, September 8, general meeting at 10 A.M. General Addresses: First, Dr. A. Luteaud, of Paris, on "The Influence of Discoveries of American Surgeons on the Development of Gynecology in Europe." Second, Dr. Neudörfer, of Vienna, on "The Military Medicine of the Present and that of the Near Future."

Friday, September 6, general meeting at 10 A.M. for general business.

Saturday, general meeting at 10 A.M.; adjournment.

Although, as stated before, it is impossible to do justice

to the material to be presented at this meeting, I cannot avoid noting a few papers on interesting subjects accompanied by the names of prominent medical men from abroad. Thus, in the section on General *Surgery*, William MacEwen, of Glasgow, Scotland, will read a paper on "Brain Surgery." Edmund Owen, of London, has two papers on "The Surgery of the Hip-joint; Paracentesis of the Articulation in the Early Stages of Disease of the Hip-joint," and "The Distention of the Capsule in Disease of the Hip-joint." Dr. Ollier, of Lyons, has a paper on "The Results of Resection in an Orthopedic and Functional Point of View." Dr. Leon Le Fort, of Paris, on "Gradual Dilatation of the Urethra." Neudörfer, of Austria, has several papers to present, dealing chiefly with problems in military surgery; he is Sanitary Chief of the Fifth Army Corps. Sir Thomas Longmore has a paper on the soldier's equipment for field dressing of wounds in time of war. Dr. Joseph Ewart, of London, has a paper on "Cholera," and Dr. Frederick Esmarck, of Kiel, a paper on "Field Dressing of Gunshot Fractures of the Lower Limbs in Connection with Transportation."

In the Section on *Obstetrics*, Prof. Emil Ehrendorfer, of Innsbruck, Austria, has a paper on "Puerperal Fever." Dr. Thomas More Madden, of Dublin, one on "Puerperal Septicæmia." Dr. M. Sänger, on "Conservative Cæsarean Section." Kirch, of Italy, on the same. Dr. Goelson Duncan, of London, gives a case of Porro's operation, and Prof. Lazarewitch, of St. Petersburg, a new normal (?) forceps. Lawson Tait has also a paper on "Tubal Pregnancy."

In other sections we note a paper by Prof. Rosenthal, of Vienna, on "Experimental and Clinical Observations of Cocaine." Dr. D. Hack Tuke, of England, on the "Care of the Insane." Dr. John Battey Tuke, of Edinburgh, on the "Legal Relation of Epilepsy." A paper on "Massage," by Dr. Charles Weber, in the Section of *Therapeutics and Materia Medica*, one by Dr. G. Ludvic Hirschfeld, of Paris, on the "Inefficacy of Ferruginous Injections," and one on the "Poison of the Cobra," by Dr. T. Gnezda, of Berlin. Dr. Dudley Wilmot Buxton, of London, gives "Experimental Studies in Asphyxia." In *Otology*, Dr. B. Loewenberg, of Paris, has a paper on the "Treatment of Tinnitus Aurium." In *Anatomy*, Reginald Harrison, of Liverpool, on the "Bladder;" Dr. William Mitchell Banks, of Liverpool, on the "Wolffian Bodies." In *Diseases of Children*, Dr. E. Bouchut, of Paris, on "Tubage of the Glottis." In the Section of *Dermatology and Syphilography*, are papers by Mr. Jonathan Hutchinson, of London, Dr. P. G. Unna, of Hamburg, Dr. T. Colcott Fox, of London, and several other well-known foreign dermatologists. The Section on *Public and International Hygiene* is favored with papers by Thudichum, of London, Antoine Magnin, of France, Tommasi Crudeli, of Italy, Domingas Freire, of Rio Janeiro, Benjamin Ward Richardson, of London, Mapother, of Dublin, and others.

Unfortunately for the entertainment of the Congress, September is an unsatisfactory month, especially in Washington; as very few private citizens or government officials remain in the city during that month, so that comparatively few houses will be thrown open. The clubs have taken, so far, no active part in preparing for entertainments, and the usual visit to the public buildings, Corcoran's Art Gallery, and a trip to Mount Vernon, will about comprise the list. The new Pension Building, a vast structure, in an out-of-the-way place, looking like an old-fashioned factory of some kind, old-fashioned, because modern factories are built with some idea of appearances, has a fine space enclosed within its walls which will be used for the banquet. The trip to Mount Vernon will be made by the foreign guests on a man-of-war, placed at their disposal by the Secretary of the Navy. The other delegates will be taken at reduced rates on the regular steamer. On Sunday, September 11th, a special train will take the foreign guests, by way of Watkins' Glen, where a stop will be made of twenty-four hours, to Niagara Falls.

The cards of invitation have been prepared, and present some interesting features. The banquet card has on its back a succession of leaves from an artist's portfolio, depicting the Landing of Columbus, Birthplace of Washington, Signing of the Declaration of Independence, Surrender of Cornwallis at Yorktown, called "The Peace of 1783," Goddess of Liberty on Bedloe's Island, Grand Army Review in Washington in 1865, Inauguration of Governor Cleveland. On the other side are the words "The Committee of Arrangements Appointed by the American Medical Association have the Honor to Invite," etc. The Niagara Falls invitation has, as a centre view, the Horseshoe Falls, then panels showing Watkins' Glen, Seneca Lake, High Bridge, New York, and Washington City. The Mount Vernon invitation has a very excellent view of the house and tomb.

The Assistant Secretary of the Treasury, Mr. Maynard, has ordered the admittance free of customs duties of articles, books, instruments, etc., imported in good faith for the Congress, and not intended for sale. The Secretary General has forwarded a list of the delegates for this purpose.

WASHINGTON, D. C, August, 1887.

A DAY AT MOORFIELDS EYE HOSPITAL.

Moorfields is the Mecca to which all foreign ophthalmic surgeons find their way when visiting London. Founded as a special hospital in 1804, it grew rapidly into notice as a school for ophthalmic surgery under the guidance of John Cunningham Saunders, who first adapted the operation for cataract to the condition of infancy. Moorfields has always been famous for its staff of brilliant operators; probably the most brilliant was George Critchett, who died quite recently. To-day, Mr. Lawson is quoted as the dextrous surgeon—Mr. Couper the authority on refraction and the inventive genius of the institution, Messrs. Morton and Lang authorities on retinoscopy, Mr. Gunn the authority on obscure retinal affections, whilst Messrs. Hulke and Tweedy are the scientists. The enormous yearly attendance is startling, one sees gathered together a wealth of clinical material not found elsewhere, and to the student who is able to make examinations and appreciate this wealth the field teems with rich returns.

The number of attendances of 25,863 new patients (1886) has been 123,475. The in-patients admitted to the wards for operation have been 2118.

Opportunity is now given young men to study ophthalmology under the instruction of such able men as Messrs. Lang, Gunn, and Silwek, younger members

of the staff who have done much to advance this Institution as a medical centre.

Mr. Tweedy, the senior surgeon of the day, brought before the notice of the visiting physicians many interesting and striking cases:

Case 1.—Man, sixty years of age, who had been operated upon for cataract; the vitreous was fluid and in making the incision the lens became dislocated down and into the vitreous; by a slight quick stroke on the lower part of the globe the lens was returned to its place, it was then removed with a scoop. Inflammation of the iris followed, leaving a closed pupil. Inasmuch as the vitreous was fluid, Mr. Tweedy selected a small sharp-pointed knife which he passed through the cornea at its outer margin, and by gently passing the knife through the iris at its inner attachment was enabled to make a horizontal incision through its whole width without the loss of any fluid. The wound gaped widely and a good oval pupil was the result, good vision was expected. The after-dressing was atropia and cold compresses.

Case 2.—A patient who presented himself with symptoms of acute glaucoma. After an operation to relieve tension the eye rapidly grew worse, and to-day the eyeball was removed. Upon examining its interior a large sarcoma of the choroid was found. Upon the removal of an eyeball a sponge which has been thoroughly disinfected in a sublimate solution is pressed into the socket over the upper lid, and this held in place by a pressure-bandage—after six hours the first bandage is removed and a second sponge reapplied—absorbent cotton, saturated with sal-alembroth, is placed in the orbit. This cotton is antiseptic, prepared in a solution of perchloride of mercury and the chloride of ammonium.

Case 3.—Needle operation for recurrent capsular cataract. The point of interest in these operations is the use of the incandescent electric lamp. The room is made absolutely dark, then with the aid of a strong condensing lens the rays of light, which are intensely brilliant, are focussed on the eye—this renders the opaque lens capsule brilliantly white, which enables the operator to lacerate the capsule without difficulty, as the depth of the anterior chamber is the more easily measured by this procedure. The after-treatment is iced cloths for twelve hours.

Case 4.—Iridectomy after an injury, without cocaine. The surgeon held the eye fixed in position; with his left hand he grasped the entangled iris, which was cut off by the assistant. Atropia and cold dressings comprised the after-treatment.

Case 5.—Woman, fifty-one years. Iridectomy for acute glaucoma. Eserine was applied, but gave only temporary relief; as vision was rapidly failing, an iridectomy was resorted to. The operation was performed skilfully, making a large scleral wound with a narrow Gräfe's knife and excising a large piece of iris; some hemorrhage followed. Mr. Tweedy anticipated a good result,

In giving an anæsthetic the Moorfields surgeons "start" the patient (young or old) on chloroform following with ether—some surgeons prefer nitrous oxide gas followed by ether. No case of accidental death has as yet followed the "administration of these mixed anæsthetics."

Case 6.—Iridectomy for chronic glaucoma in a man fifty-three years. No remarks.

Case 7.—Removal of an incarcerated iris following a wound in the cornea produced by bursting of a ginger ale bottle. After-treatment atropia solution grains iv to ℥j, and cold applications with slight pressure-bandages.

All instruments used about an operation are disinfected in a solution of the bichloride of mercury 1 to 5000. After the removal of the iris it was found that traumatic cataract had developed which would be treated as the exigencies of the case required. Atropia solution and cold applications suggested.

Case 8.—Burow's operation for trichiasis. The upper lid was everted over a horn spatula and an incision made through the cartilage about two lines from the margin of the lid—this opening is made wide enough to admit the point of the scissors blade, which is passed forward beneath the tarsal cartilage and the orbicularis muscle inward, in two sweeps of the scissors the cartilage is severed—in like manner the outer half is cut. The narrowed opening is by this operation made wider and the eyelashes pushed forward, giving the patient great relief—usually one operation brings permanent relief. The operation may be repeated. Belladonna lotion dressings applied. No reaction generally follows.

Case 9.—Cataract operation on a patient sixty years old. The Moorfields incision, which is a semi-flap, was made, the iridectomy large—followed by a peripheral laceration of the capsule—the lens was easily delivered and the patient counted fingers at once. The eye was dressed in a style peculiar to Moorfields. First patent lint disks, upon which a coat of vaseline has been placed, are put upon the closed lids, over this absorbent (antiseptic) cotton—a light woollen bandage holding all in place, after twenty-four hours the dressing is renewed—in ten days the patient is allowed his freedom. By following this treatment but two per cent. of fatal cases occur, while it places the patient in more unpleasant surroundings—living in constant darkness for ten days—the English (London) surgeons do not like to change for the "rational method of treating cataract operations" now resorted to by the advanced ophthalmic surgeons on our side of the water.

Case 10.—Mr. Lawson followed by first bringing to our attention a unique case that he had operated upon ten days ago. The patient suffered from a marked congenital deformity of the upper left eyelid (coloboma), the cleft extended to the upper attachment of the lid, exposing the eyeball. It was not only unsightly, but the globe was constantly irritated by this exposure. The margins of the cleft were denuded, following this a vertical incision was made, one inch in length, extending from the outer canthus vertically, this allowed the cleft to be brought in apposition by silk sutures; the outer wound was subsequently brought together in like manner. The after-treatment consisted in the constant applications of lead water and laudanum. The result was all that could be desired.

Case 11.—The removal of a mature cataract in a patient sixty years old. The operator passed a knife through the anterior chamber, bringing its point out directly opposite its point of entrance—the withdrawal was made in one sweep, making a typical Gräfe incision. Mr. Lawson attributes much of his success in cataract operations to this movement of his hand; where many

to and fro movements are made the lips of the wound are serrated, and in consequence its perfect coaptation interfered with, allowing too much drainage, and preventing healing by first intention; microbes also finding an easy entrance. The iridectomy and delivery of the lens was perfect. The after-treatment did not vary from that described above.

Case 12.—Traumatic cataract in a man fifty years old. This was a particularly interesting case. Two weeks ago a small piece of steel penetrated the cornea, rupturing the lens capsule, producing a traumatic cataract. It was thought that the steel had buried itself in the interior of the globe, which would eventually produce panophthalmitis, or engender danger to its fellow. The lens was first to be removed, to ascertain the location of the foreign body. A free corneal flap was made upward, followed by an iridectomy. In removing the iris, it was found that the lens was soft and pulpy; by slight pressure the lens matter was forced out, and with it came a piece of steel about one millimetre square; a clear black pupil was obtained, and the patient counted fingers. A good result was prognosticated.

Case 13.—Boy, aged twelve years, with proptosis of the left eyeball. This case is being watched with considerable interest, as the supposed cause of the displacement of the globe is due to an ivory exostosis. Nothing was done.

Case 14.—Was operated upon for convergent strabismus. The subconjunctival method was applied. The conjunctiva, which was rendered insensible by an application of a two per cent. solution of cocaine, was seized over the insertion of the internal rectus, a horizontal incision one centimetre in length, made through the conjunctiva and Tenon's capsule. The muscle was then elevated by passing a hook through this opening and underneath the muscle, with one snip of the scissors the muscle was detached. The tissues surrounding the insertion of the muscle were freely separated. The after-treatment was simple dressing. A full correction of the visual defect was made prior to the operation. In squints less than two lines, the visual defect is corrected; if this correction fails to remove the convergence, an operation is performed after six months, above this defect an operation is performed at once, plus the visual correction. The double tenotomy is rarely performed at the same sitting.

Case 15 came under the charge of Mr. Couper. The patient, a woman, fifty-two years old, had *immature* cataracts in both eyes, *vision equalled* $\frac{10}{CC}$ in each eye. The knife was passed through the cornea without the usual forceps fixation; after the removal of part of the iris, the anterior portion of the lens capsule was grasped with a Forster's forceps and detached, the lens delivered without difficulty. Since the introduction of Forster's method of removing the anterior half of the lens capsule, Mr. Couper has had a lesser number of recurrent capsular cataract operations to perform. Mr. Couper makes the following dressing: First the lids are thoroughly anointed with boracic acid ointment, followed with a covering of the above described antiseptic cotton-wool, over all a knit wool bandage, this bandage renewed in twenty-four hours; after one week, dry dressings made. The patient is tested for glasses after three to six weeks.

Mr. Couper called attention to the fact that he does not hesitate to remove *immature cataracts*, an experience dating over eight years gives him encouragement to continue.

Case 16.—Ten days ago the patient, a boy, aged seven, presented himself, having lamellar cataracts, and was operated upon at once by the needle method; to-day the soft lens substance was removed by suction, leaving the pupil clear. Before the introduction of Bowman's syringe, the nucleus of the lens was distinctly seen in the anterior chamber, looking hard and firm. It was broken to pieces by the action of the suction, and entered the mouth of the instrument without difficulty. Atropia solution and iced compresses constituted the after-treatment. The solution used in the suction instrument was one to twenty of carbolic acid.

Case 17.—Subacute glaucoma. An iridectomy performed four weeks ago, but at intervals tension increased to plus three, during this period paracentesis was performed. To-day the seventh operation was made. Tension disappeared at once. Sclerotomy may be resorted to. The after-treatment *nil.*

Case 18 demonstrated the value of large probes in dilating strictures of the lachrymal duct. Under this treatment the patient has been doing well—the epiphora has almost entirely disappeared.

The above series of cases will give your readers a correct idea of the average amount of surgical operations performed daily. In the out-patient department nearly three hundred cases were counted, suffering from all grades of disease from simple hypermetropia to inflammations of the most violent type.

L. WEBSTER FOX.

LONDON, July 27, 1887.

NEWS ITEMS.

THE HYGIENE OF SUMMER RESORTS.—The necessity for the enforcement of proper precautions in the sanitation of hotels, dwellings, and villages which are occupied during the summer only, is forcibly shown by the following case in point, as given in the *Sanitary Engineer* of August 6, 1887:

Another instance of criminal carelessness and ignorance has been brought to light in the matter of the drainage and water-supply of a summer resort—a condition of things for which the proprietors should be held pecuniarily responsible in damages for the sickness resulting, and criminally if fatal results ensue. Investigation at the Conanicut Park Hotel, near Providence, R. I., where an outbreak of fever resulted in an abandonment of the house by the guests, showed that the well was situated under the floor of a room adjoining the laundry; two earthen drains, with the usual leaky joints, passed within a few feet of this well, making a junction just beyond it, so that the well, with considerable ingenuity, was located just within the angle, in order that every possible facility might be afforded for its receiving the contents of these leaky drains. A removal of the floor revealed a mass of filth from the drains running into the well. Of course, the business of this hotel for this season is practically killed. The question, however, which is of importance, now is, How many other summer resorts have their wells or drinking-water cis-

terns in close proximity to drains now defective or likely to become so?

The Providence *Journal* says the Rhode Island State Board of Health has no funds to enable it to make the necessary inspections of such resorts. If this is true, it is to be hoped that such will not be the case another year, and as a measure of protection every State Board of Health should endeavor to secure legislative authority and funds to make such inspections, and also to prepare a plan showing the drainage system of all summer hotels, including location of wells, cisterns, and cesspools, all to be drawn to a scale. A copy of this plan, certified to by State health authorities, should be required by law to be conspicuously posted in each summer resort. There is now sufficient intelligence in these matters outside the keepers of such establishments to detect and cause the correction of any serious defects; publicity, therefore, would be an effective safeguard.

It is quite as important in these days that such information should be posted for the information of the public as that certificates of boiler inspections should be displayed on all steam vessels. Indeed, we believe polluted water destroys more lives than steam-boiler explosions.

BLEEDING IN SUNSTROKE.—At the Chambers Street branch of the New York Hospital, a patient suffering from sunstroke who had a temperature of 108.8° and had had violent convulsions for twelve hours, was recently bled to the extent of eighteen ounces, with the effect, apparently, of saving his life; although twice afterward the temperature went up as high as 105°. A case very similar in character which was brought to the same hospital some time since, and in which bleeding was not resorted to, terminated fatally.—*Boston Medical and Surgical Journal*, August 4, 1887.

THE ILLINOIS STATE BOARD OF HEALTH.—The Illinois State Board of Health did a piece of work at its last meeting which required courage. Under the new law they are permitted to grant licenses to itinerant venders of medicines for a fee of $100 a month. At its meeting there were eight applications for such licenses, backed up by powerful political influence, which would have brought in $800 each month into the board's coffers. They were all denied licenses, however, though to an outsider, it looks like heroic application of the law.—*Sanitary News*, August 13, 1887.

BROMIDIA.—The United States Circuit Court has granted a perpetual injunction restraining Gross et al. from manufacturing or selling any medical preparation under the name of "bromidia" or any colorable imitation of it.

THE CHOLERA.—Three fatal cases of cholera are officially reported as having occurred this week at Malta. The authorities appear to be doing what they can to prevent the spread of the disease by removing suspicious cases to the lazaretto, and by thoroughly cleansing out the houses. In consequence of the existence of the malady on the island, quarantine is imposed at Gibraltar and Madrid on vessels arriving thence. At Catania the disease during the last week has not, it appears, diminished in violence, from fifteen to twenty deaths being recorded daily. The disease has extended to the prisons and monasteries. In the provincial towns (especially at Anderno, Paterno, Francofonte, and Cerami) the epidemic seems on the increase, whilst more favorable reports come from Syracuse and Calabria. According to a recent telegram from Bombay, cholera prevails to a serious extent at Peshawur, where 300 deaths occurred from the disease during July.—*Lancet*, August 6, 1887.

LARYNGOLOGY IN BERLIN.—The new Laryngological Clinic under Dr. Fränkel is now in full work, and is attended by a large number of patients. It is fully recognized by the authorities as a place for study, being replete with every instrument and convenience.—*Lancet*, August 6, 1887.

BROCA'S STATUE has been recently taken from the Salon and erected at the corner of the boulevard Saint-Germain and the street of l'École-de-Médecine.

THE INDIVIDUAL BATH IN PUBLIC HYGIENE.—DR. ROHÉ is quoted as follows upon this subject by *Science* of July 15, 1887:

Public, like private, bathing institutions, must make provision for individual baths. Large pools, in which many persons bathe at once, fail to answer the requirements of sanitary science or of public decency. A French army surgeon, Duval, has overcome this difficulty, and now both the French and German soldiers have proper facilities for bathing. The latter are required to bathe every week, the government furnishing the bath-room, warm water, soap, and towels. In our army and navy no steps have been taken to introduce this reform, although Dr. Billings has shown its feasibility. Dr. Lassar, of Berlin, has demonstrated the practicability of separate bath-rooms in connection with public bathing, and has been urging the extension of the military system to the civil population, so that every German may have his weekly bath. He gives excellent illustrations of the practical benefits to be derived from the adoption of such a system. At the white-lead works in Ehrenfeld, the eighty employés are required to bathe weekly, the facilities being furnished by the proprietor. In the first year, 1884, the sickness was reduced twenty per cent., and in 1885 it was reduced still lower, fifty per cent. In certain dye-works in Berlin, ten rooms, containing shower-baths, have been provided for workmen and their families, and for all who desire to use them. In Göttingen, with a population of 21,000, of which number 3000 are children who attend the public schools, baths are fitted up in the basement of one of the schoolhouses. A class of fifty can bathe in an hour. Each child has the opportunity of bathing once in two weeks, and seventy-five per cent. of the children avail themselves of it. The authorities and teachers are unanimous upon the point that the system is of great benefit to the children, not only from its direct sanitary advantage, but from the habits of cleanliness formed, to which they are likely to adhere through life. The only cities in the United States having public baths are, Boston, with 17; New York, 15; Philadelphia, 5; Brooklyn, 3; Cleveland and Hartford, each 1; and Buffalo, the number not given. In New York, 3,431,086 persons bathed from June to October in 1883; during the same time in Boston, 959,765; and in Brooklyn, 225,885. In eighteen

cities where there are no public baths, only about twenty-three per cent. of the residences are supplied with bath-tubs.

PELLAGRA IN ITALY.—This disease has assumed serious proportions in Italy. It is attributed to the poor bread commonly used, and has affected the inhabitants of the provinces of Lombardy and Venetia with especial severity.

The bread is coarse, ill made, badly baked, and fresh but once in five days; it can not be digested by the stoutest stomach.

The government is preparing new quarantine and preventive laws against the disease. In the Exhibition of Millers and Bakers at Milan, the products of infected districts were marked by cards of warning. In the last five years numerous hospitals have been opened for those afflicted with pellagra; but its ravages among the very poor have been extensive.—*L'Abeille Médicale*, June 13, 1887.

ARTICULATED AND SIGN LANGUAGE.—When we wonder at the rapidity with which deaf-mutes spell out their words on their fingers, we are apt to feel that this invention has really diminished the disadvantages of this class of persons almost to a minimum. That such is not the case is vividly suggested by the statistics which a teacher of the deaf-mute has had the patience to gather. He has counted the average number of words which a pupil in his school wrote or spelled on the fingers per day, and finds it to be 1118; the teacher similarly employs 216, but uses signs equivalent to 861 words daily. It has been estimated that a mother talks 27,000 words to her child in a day. Making due allowance for the habit of forming only parts of sentences which the deaf-mutes cultivate, and also for the suggestiveness of the sign language (which hearing people really also use in the form of an expressional accompaniment), the comparative meagreness of the deaf-mute's conversation and slowness with which his mental food can be brought to him, are plainly evident.—*Science*, July 8, 1887.

A NEW WINE.—A Frankfurt (German) firm has produced a wine made from whortleberries which has been extensively tested and examined by German chemists. Its percentage of alcohol is less than that in grape wines, and its purity has led to its use in the army and navy, and its quality and refreshing taste have led to its introduction into a number of hospitals.

THE IRRIGATION SYSTEM OF DISPOSING OF SEWAGE.—The irrigation system of sewage disposal has been greatly extended in Germany. In Berlin it has given great satisfaction, the sewage of 900,000 people being carried to irrigation fields, and the water which drains off being submitted to chemical examination for evidences of pollution, which were discovered but once during an entire year. The objection that this system of sewage treatment is not applicable in cold climates is invalid, as is shown by the results in Pullman, Ill., and in Dantzig, Germany. Birmingham, England, with a population of 600,000, has adopted the irrigation system, and the income realized during 1885 from the sale of stock and produce from the sewage farm, amounted to over $100,000.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT U. S. ARMY, FROM AUGUST 16 TO AUGUST 22, 1887.

BAXTER, J. H., *Colonel and Chief Medical Purveyor.*—Ordered to proceed from Washington, D. C., to New York City, on public business, and on completion thereof to return to this city.—*S. O. 187*, par. 5, *A. G. O.*, August 13, 1887.

BAILY, JOSEPH C, *Lieutenant-Colonel and Assistant Medical Purveyor.*—Granted leave of absence for one month.—*S. O. 191*, par. 10, *A. G. O.*, August 18, 1887.

WOLVERTON, W. D., *Major and Surgeon* (Washington Barracks, D. C.).—Granted leave of absence for twenty days.—*S. O. 171*, par. 3, *Division of the Atlantic*, August 16, 1887.

TREMAINE, W. S., *Major and Surgeon.*—Found incapacitated for active service by an Army Retiring Board, and extension of leave of absence on account of sickness still further extended until further orders.—*S. O. 192*, par. 9, *A. G. O.*, August 19, 1887.

BYRNE, CHARLES B., *Captain and Assistant Surgeon* (Washington Barracks, D. C.).—Granted leave of absence for one month, with permission to apply for an extension of one month.—*S. O. 171*, par. 4, *Division of the Atlantic*, August 16, 1887.

DIETZ, WILLIAM D., *First Lieutenant and Assistant Surgeon.*—Granted leave of absence for two months, with permission to apply for an extension of one month.—*S. O. 189*, par. 7, *Headquarters of the Army, A. G. O.*, August 16, 1887.

MCCAW, W. D., *First Lieutenant and Assistant Surgeon.*—Relieved from temporary duty at Fort Riley, Kansas, and ordered to his proper station, Fort Leavenworth, Kansas.—*S. O. 84*, par. 3, *Department of Missouri*, August 15, 1887.

JOHNSON, HENRY, *Captain and Medical Storekeeper.*—Ordered, in addition to his present duties, to take charge of the office and perform the duties of Acting Assistant Medical Purveyor in New York City, during the temporary absence on leave of Lieutenant-Colonel Joseph C. Baily, Assistant Medical Purveyor.—*S. O. 191*, par. 11, *A. G. O.*, August 18, 1887.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE U. S. MARINE HOSPITAL SERVICE, FOR TWO WEEKS ENDING AUGUST 20, 1887.

LONG, W. H., *Surgeon.*—Leave extended six days on account of sickness, August 13, 1887.

FESSENDEN, C. S. D., *Surgeon.*—Leave extended thirty days, on account of sickness, August 19, 1887.

GODFREY, JOHN, *Surgeon.*—Granted leave of absence for thirty days, August 17, 1887.

GLENNAN, P. H., *Passed Assistant Surgeon.*—Granted leave of absence for thirty days, August 18, 1887.

MCINTOSH, W. P., *Assistant Surgeon.*—Granted leave of absence for twenty-five days, on account of sickness, August 17, 1887.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING AUGUST 20, 1887.

ROBINSON, S., *Medical Inspector.*—Placed on Retired List.

GARDNER, J. E., *Passed Assistant Surgeon.*—Detached from Naval Hospital, Norfolk, Virginia, and ordered to the Fish Commission Steamer "Albatross."

MARTIN, WILLIAM, *Assistant Surgeon.*—Ordered to Naval Hospital, Norfolk, Virginia.

VAN REYPEN, W. K., *Surgeon.*—Appointed Medical Inspector from August 16, 1887.

SIMONS, M. H., *Passed Assistant Surgeon.*—Appointed Surgeon from August 16, 1887.

THE MEDICAL NEWS *will be pleased to receive early intelligence of local events of general medical interest, or of matters which it is desirable to bring to the notice of the profession.*

Local papers containing reports or news items should be marked.

Letters, whether written for publication or private information, must be authenticated by the names and addresses of their writers—of course not necessarily for publication.

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